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Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wire—Valve Spring—Music—Clip—Pin—Hairpin—Hook and Eye—Broom—Stapling—Bookbinding—Dent Spacer Wire—Reed Wire—Clock—Pinion—Needle-Bar—Screw Stock—Armature Binding—Brush—Card—Florist—Mattress—Shaped—Rope—Welding, Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires.

WICKWIRE SPENCER STEEL COMPANY

New York Worcester Buffalo Chicago San Francisco

DETROIT REPRESENTATIVE:

CRAINE-SCHRAGE STEEL CO.

8701 Epworth Boulevard

WISSCO WIRE

by Wickwire Spencer

AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

Reg. U. S. Pat. Off.
Published Weekly

Volume 78 Number 19

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AUTOMOTIVE INDUSTRIES

May 7, 1938
Vol. 78, No. 19

Labor

General Motors Scores UAW; Bohn Aluminum Strike Ends

Inability of the United Automobile Workers Union to control strike activities of its members was again attacked by General Motors on May 3 after a stay-in strike in the Chevrolet parts plant in Bay City, Mich., had necessitated shutting down of the plant.

"The UAW has again shown that they are irresponsible in allowing their members to cause a stay-in strike, making it necessary to close another Chevrolet plant," said Floyd O. Tanner, vice-president of General Motors in a statement issued in connection with the Bay City strike.

"The controversy which is of a minor nature involving only three men, has not been cleared through the grievance procedure provided by the agreement between the corporation and the union.

"The continual hazard to production and employment by irresponsible actions like this proves that some members of the union and organiers have no respect for their obligations not to interfere with production until alleged grievances have been presented under the terms of the agreement and no relief has been obtained by negotiations in the regular way. These repeated violations of the contract jeopardize seriously the future relationship between the UAW and the corporation."

One hundred union workers seized the plant and remained inside causing a shutdown affecting 1100 other workers. Elmer Dowell, UAW director for GM locals, ordered the 100 men back to work by telegram, but up to the issuance of the GM statement, the orders had not been obeyed. The strikers had chained factory and office doors and announced the plant would not reopen until grievances had been adjusted. Grievances included charges of shifting workers to reduce salaries and demanded removal of the plant manager and his assistant. Union officials were attempting to have the grievances settled through regular arbitration channels.

LOTHAIR TEETOR

. . . has been appointed president of the Perfect Circle Co., Hagerstown, Ind., succeeding his father, C. N. Teetor, who was president and general manager until his death last year. Lothair Teetor has been actively connected with the Perfect Circle Co. and its predecessors for 18 years. Other officers elected are: Ralph R. Teetor, vice-president, head of the engineering division; L. B. Davis, secretary-treasurer and C. Ray Teetor, comptroller.

The Chevrolet transmission plant in Saginaw, Mich., had been closed on April 28 when UAW pickets surrounded it in protest against alleged employment of foremen for longer hours than production workers. UAW pickets were withdrawn on May 2 and the plant, employing 900 workers, was scheduled to reopen on May 4 although Chevrolet officials warned that any renewal of picket lines would postpone reopening of the plant. Meanwhile it is expected that the dispute will be submitted to negotiation.

Employes in eight Detroit plants of the Bohn Aluminum & Brass Corp., resumed work on May 2 after

(Turn to page 622, please)

Production

First Week Output Estimated To Hold April Level

Although there are signs that automobile and truck production probably reached its spring peak during April, there was no direct evidence of this fact in the industry's projected output for the week ending May 7.

Preliminary estimates indicate that output for the first week of the new month will total slightly in excess of 58,000 cars and trucks, which is roughly the same level maintained during most of April. As a matter of fact this week's total probably will be higher than actual production during the last week in April because of a resumption of its previous schedule by Chevrolet this week after a temporary close down during the latter part of last week.

Since 1929, April has represented the peak production month in every year but two, which lends strength to the assumption that May, this year, probably will show a slightly lower total than last month. However April production normally runs in excess of retail sales in order to keep dealers' stocks well rounded out with a selection of all models.

This year that has not been the case, as production has continued to follow sales closely and April saw no production increase in excess of the seasonal gain in retail deliveries. For that reason May production can very well equal April's, even though experience of the industry has been otherwise. Production did not hit its peak until May in 1932 and until June in 1933.

Because of the revision in original estimates for the last week in April it now appears that official figures will show production for the month to be closer to 240,000 cars and trucks than to the 250,000 previously announced.

Cadillac expects to show a slight increase in May over its April output, although its production for the week remains unchanged for April.

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Henry Ford's Busy Week

Visits White House—Makes Speech—To Receive Medal

Two days after his well-publicized visit to the White House, Henry Ford attended a dinner of the bureau of advertising of the American Newspaper Publishers Association, in New York—a notable event, as he seldom appears at a public gathering.

Mr. Ford's part in the proceedings of the dinner was a two sentence speech, in which he said, "We are all on the spot. Stick to your guns and I'll help you all I can with the assistance of my son."

When he sat down, the toastmaster, S. E. Thomason, publisher of the Chicago *Times*, complimented him on the terseness of his first speech. "And the last," answered Mr. Ford.

With Mr. Ford at the speakers' table was his son, Edsel Ford; Mrs. Edsel Ford, and W. J. Cameron, spokesman for the Ford interests.

To Receive Medal Award

The institution of Mechanical Engineers of Great Britain has announced that Henry Ford will be presented with the James Watt International Medal. The presentation is tentatively scheduled for January, 1939, in England.

To commemorate the bicentenary of the birth of James Watt on January 19, 1736, the Institution decided to award every two years a gold medal to an engineer of any nationality who is deemed worthy of the highest award the Institution can bestow and that a mechanical engineer can receive. In the making of the award the Institution has secured the cooperation of engineering societies in all parts of the world.

After considering the recommendations of societies in leading industrial countries, the council of the Institution of Mechanical Engineers unanimously decided to make the second award to Henry Ford, nominated by the American Society of Mechanical Engineers.

Sir John Aspinall First Recipient

The first awarding of the James Watt medal was posthumously to Sir John Aspinall on January 22, 1937. When Sir Aspinall, as chief engineer of the Lancashire and Yorkshire Railway, was appointed its general manager, it was the first time an engineer had ever been put on the traffic side of a railway in England.

His part in transporting the army to the coast in 1914, with its field equipment, was one of the most remarkable features of England's early war efforts.

Underwood & Underwood

Henry Ford, billionaire motor car magnate, covers his face with his hat and refuses to answer questions of reporters as he leaves the White House, after luncheon with the President. He is escorted by Major Henry M. Cunningham, manager of the Washington branch of the Ford company.

Pitcairn Speaks on Autogiros Before House Committee

Harold F. Pitcairn, of Philadelphia, president of the Autogiro Co. of America, told the House Military Affairs Committee that his concern is now able to supply the Government with autogiros free from the defects found in earlier models and that the War Department in carrying on proposed experimental work should take advantage of the $3,500,000 already spent in development rather than starting from scratch.

He said that the improved model will be available shortly and that, while the safety factor is the principal advancement, both the speed and pay load had increased per unit of horsepower. Plant expansion is contemplated by his firm, he told the committee, and preliminary flights on the improved model will be made within two months.

Pitcairn, a member of the President's Aviation Committee in 1934, suggested that the pending Dorsey bill be amended so that the $2,000,000 expenditure under the direction of the Secretary of War for the de-

(Turn to page 648, please)

Traffic Research Bureau Activities at Yale

The bureau for street traffic research has announced that, beginning July 1, its activities will be carried on in coordination with the Yale University committee on transportation. A program will be carried on of traffic research and professional training in the field of traffic engineering and administration.

Fifteen fellowships and four graduate courses have been announced covering the following fields of training: principles of street and highway traffic control; problems of street and highway traffic control; economics and administration of traffic control; planning and design of traffic facilities.

Control Fight Won by Reo Management

By ousting William Loeb, Jr., of New York, from the board of directors, management of the Reo Motor Car Co. in its annual stockholders' meeting won a proxy battle for control of the company. Loeb was succeeded by Earl W. Goodnow, vice president and general manager of the Atlas Drop Forge Co. of Lansing, Mich.

Vacancies on the board created by the resignation of Frank A. Vanderlip, Jr., and Charles G. Sinclair, Jr., of New York, were not filled, the board obtaining permission from the stockholders to act on their successors at a later date. It was indicated, however, that they may not be replaced, thus reducing the size of the board.

The company reported it had advanced from eighth to sixth place in the production of commercial vehicles last year in the nation. Its 1937 financial report showed a total loss of $1,982,292.66 last year, and a total operating deficit of $6,244,916.66 at the end of last year. At that time, net working capital amounted to $4,403,119, and net sales were $13,069,350.

General Motors' Report For First Quarter

The General Motors Corp. financial report for the first quarter, ending March 31, 1938, indicates that the sharp decline in business activity experienced during the fourth quarter of 1937, never before in the corporation's history even approximated in extent with relation to time, adversely affected the corporation's operations during the first quarter of 1938. The trend of the

business as measured by retail sales to consumers in the United States during the months of January and February, was fairly well stabilized with, if anything, a slight trend downward. The improvement in retail sales that normally begins to manifest itself in February, and more importantly in March, due to the seasonal influence, was not quite as great as would be normally expected on the basis of the January and February levels. Briefly expressed, therefore, the state of the business declined relatively somewhat further during the quarter, but not importantly.

According to the report, the corporation's overseas activities followed a different trend. No sharp curtailment occurred in consumer absorption in the last quarter of last year. Sales continued upward. However, during February, in England, and during March in certain other markets, there appears to have been a decline in the trend, indicative possibly of a general world decline, reflecting perhaps the depression existing in the United States upon which is undoubtedly superimposed the adverse influence of the disturbing political events in Europe.

Net earnings of General Motors, including equities in the undivided profits or losses of subsidiary companies not consolidated, for the first quarter ended March 31, 1938, amounted to $8,234,017, as compared with $44,814,166 for the corresponding quarter of 1937. After deducting dividends of $2,294,555 on the preferred stock, earnings available for the common stock were $5,939,462 during the first quarter of 1938. This compares with earnings on the common stock of $42,519,611 for the first quarter ended March 31, 1937. Earnings for the first quarter of 1938 were equivalent to $0.14 per share on the average common shares outstanding during the quarter and compare with earnings of $0.99 per share for the corresponding quarter of 1937. Earnings for the first quarter of 1938 were adversely affected by a non-operating loss of $1,883,252, equivalent to $0.04 per share, due to the revaluation since December 31, 1937, of securities held by the General Exchange Insurance Corp., a wholly owned subsidiary. The above earnings for the first quarters ended March 31, 1938, and 1937 make no provision for surtax on undistributed profits.

Earned surplus as of March 31, 1938, was reported as $389,988,416. At the end of the first quarter in 1937 earned surplus was $399,865,616.

Automotive Exports

Foreign sales of American automotive products have registered a steady advance ever since the low point reached in 1932. The value of this business in 1937 advanced 43 per cent over 1936, reaching a total of $360,168,528. Continuing this progress, according to a statement by Irving H. Taylor, head of the Automotive - Aeronautics Trade Division, Department of Commerce, overseas shipments of all automotive products during the January-March, 1938, period attained a total valuation of $94,469,703; this was an increase of $8,988,020 or 10.5 per cent over the corresponding months of 1937.

Truck Exports

The well - sustained popularity abroad of American trucks accounted for the major portion of the export increase, according to Mr. Taylor, the export value of commercial vehicles having moved up from $17,890,717 during the opening quarter of last year to $26,245,655 through March of this year. Miscellaneous automotive products also registered a slight improvement, with $33,520,997, in comparison with $32,452,858, while export shipments of passenger cars declined moderately in value from $35,138,098 to $34,703,051 at the end of March.

With factory sales from the automobile plants in the United States totaling 618,877 units during the first quarter of 1938, or 50 per cent less than through March, 1937, units exported, including the number estimated to have been assembled abroad, totaled 148,241, or 24 per cent of production.

Aeronautic Exports

Exports of aeronautic products from the United States in March were valued at $5,977,319, or slightly better than the preceding month and almost twice those of March, 1937.

Through the first quarter of the current year aeronautic exports attained a total value of $14,320,273, or 99.3 per cent greater than the previous record established during the opening months of 1937. So far this year these exports comprised the following: 159 aircraft valued at $7,041,038, compared with 123 valued at $4,024,649 in the corresponding period of 1937; 304 aircraft engines valued at $1,734,492, compared with 249 valued at $1,460,312; parachutes valued at $71,981, compared with $2,694; and aeronautical parts, instruments, and accessories valued at $5,472,762 compared with $1,695,458.

	MARCH 1938		MARCH 1937		THREE MONTHS ENDED MARCH 1938		1937	
	No.	Value	No.	Value	No.	Value	No.	Value
EXPORTS								
Automobiles, parts and accessories		$ 28,971,029		$ 26,819,207		$ 91,454,251		$ 82,379,819
PASSENGER CARS								
Passenger cars and chassis	16,658	10,613,206	22,401	13,121,424	55,407	34,703,056	59,246	35,138,098
Low price range $850 inclusive	14,507	8,294,202	20,520	10,985,265	48,233	26,887,646	54,012	29,360,309
Medium price range over $850 to $1,200	1,799	1,735,913	1,508	1,445,833	6,143	6,087,734	4,293	4,074,171
$1,200 to $2,000	283	408,626	255	392,040	812	1,198,574	686	1,061,077
Over $2,000	69	174,465	118	298,286	219	529,102	255	642,541
COMMERCIAL VEHICLES								
Motor trucks, buses and chassis (total)	13,668	8,590,973	11,082	5,801,801	43,543	26,245,655	34,131	17,890,717
Under one ton	1,379	669,142	1,516	552,338	5,784	2,360,162	4,231	1,585,136
One and up to 1½ tons	10,339	5,866,618	7,619	3,500,865	31,336	16,828,243	24,777	11,291,148
Over 1½ tons to 2½ tons	1,237	1,025,580	1,469	1,054,089	4,341	3,465,223	3,746	2,890,074
Over 2½ tons	536	901,542	385	614,720	1,528	3,221,923	1,041	1,870,441
Bus chassis	177	128,091	93	79,789	554	370,104	336	253,918
PARTS, ETC.								
Parts except engines and tires		4,849,071		5,335,460		16,296,592		16,232,835
Automobile unit assemblies		3,527,700		2,784,487		9,433,655		7,891,665
Automobile parts for replacement (n.e.s.)		283,506		365,117		859,451		1,092,627
Other automobile accessories (n.e.s.)		565,052		602,788		1,480,170		1,595,786
Automobile service appliances								
Airplanes, seaplanes and other aircraft	61	3,492,805	41	1,392,238	159	7,041,038	123	4,024,649
Parts of airplanes except engines and tires		1,916,320		618,060		5,472,762		1,695,442
INTERNAL COMBUSTION ENGINES								
Stationary and Portable								
Diesel and semi-Diesel	61	153,691	56	122,914	122	676,040	180	417,702
Other stationary and portable								
Not over 10 hp.	1,224	85,632	1,438	102,216	2,988	211,934	4,500	261,363
Over 10 hp.	99	87,314	209	95,381	757	275,603	541	303,626
Engines for:								
Motor trucks and buses	2,461	245,557	2,756	285,154	9,666	1,106,319	8,695	880,568
Passenger cars	5,627	439,196	6,867	488,883	18,597	1,503,628	25,742	1,744,018
Aircraft	102	538,832	99	522,447	304	1,734,492	250	1,460,328
Accessories and parts (carburetors)		248,943		257,937		720,214		639,649
IMPORTS								
Automobiles (dutiable)	34	22,414	109	77,318	187	109,374	356	231,788

U. S. Chamber of Commerce Meeting

Automotive Leaders Took Large Part in Discussion at 26th Annual Washington Assembly

"Not as the apostle of any particular creed, but to give certain facts in connection with labor conditions as they were in General Motors at the time of the strike in 1937, and as they appear today," was William S. Knudsen's preface to an address before the twenty-sixth annual meeting of the Chamber of Commerce of the United States, meeting in Washington, May 2 to 5.

The president of General Motors told a crowded and attentive general session of the meeting that "the largest drawback to good industrial relations is the Wagner Act."

"So what?" was his challenge to the meeting, at the end of a sentence which pointed out that "the National Labor Relations Board, set up to administer the act makes no pretense of paying any attention to the employer's side of the case. He can only be heard when he is summoned and he knows before he goes that there is no record of a single decision where he has had a ghost of a show."

"The industrial union in its present form has to depend on force in defiance of law," Mr. Knudsen continued. "There are not many places in the United States at the moment where laws can be enforced to control the movement. The technique of the sitdown strikers is identical with that of the syndicalists of Europe. France has finally had to take a stand against them because of the dangers as a political club rather than a social defensive weapon.

"I feel confident," he added, "that the United States will eventually take the same stand officially."

The outstanding result of the present order of thinking on labor, according to Mr. Knudsen, is the killing off of skill and pride in work. "Where previously the man of skill was regarded highly," he said, "his place is now being taken by the man of less skill, who can threaten the most and sign up the most members."

"The one wish which today spurs us all on is the wish for more work," said Mr. Knudsen in advancing his contention that "there is no substitute for a man's job except another job" and his conclusion that none of the special palliatives advanced so far are substitutes for a full-time honest job.

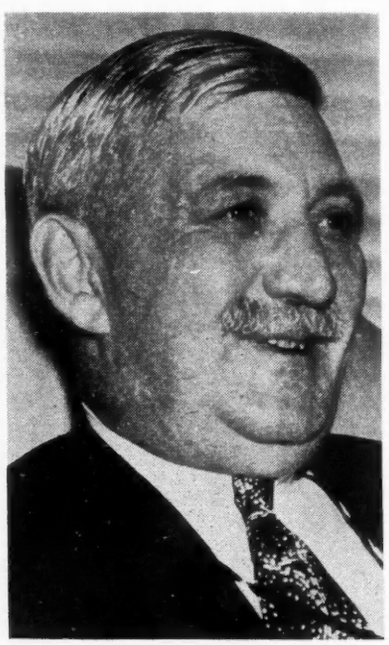
"The opportunity for everyone to advance according to merit is the last stronghold of industrial democracy," said Mr. Knudsen, and "industrial democracy must be preserved."

The program of the annual meeting of the Chamber was studded with addresses of automotive interest and speakers with automotive connections, reflecting, according to many observers, the prevalent feeling that the automotive industry is still the acknowledged leader out of depressions.

To B. C. Heacock, president of the Caterpillar Tractor Co. and a director of the Chamber, a proper background for expanding business opportunity requires a re-appraisal of the incentives for leadership in American business and government. Men fitted for leadership in government are not necessarily fitted for business leadership, he pointed out, and the reverse may be true also.

"When Washington, Jefferson and Company originally assigned tasks to these two different groups, they knew a lot more than some of our more modern students," he said.

"If a clear and convincing case cannot be made out against their wisdom and if, indeed, it cannot be conclusively proved that they were thoroughly stupid, why should we be called upon or expected to accept, in lieu of their knowledge and experience, the pink ravelings from some of our modern brain 'twisters.' A background for expanding business activity might well include correction of some of our unwise allocation of jobs."



W. S. KNUDSEN

"Not as an apostle . . . but to give certain facts."

B. C. HEACOCK

"Men fitted for leadership in government are not necessarily fitted for business leadership."

Summarizing the requirements for an expansion of business activity, Mr. Heacock believes they should include:

1. Encouragement of leadership in business by rewarding achievement, not penalizing it.

2. Insistence on complete separation of politics and economics; keeping proper civil functions in the hands of Government leaders and economic functions in the hands of business leaders.

3. Promoting greater efficiency in Government and business by discouraging either politicians or business men from assuming responsibilities beyond their capacities.

4. Removing restraints from personal liberty that we may foster competition in all business activities and advance living standards, both physical and cultural in the traditional American way.

5. Cultivating a broader attitude on the part of leaders—both governmental and business—toward their responsibilities to society at large.

Industry can only be successful in selling itself to the public through its own employes, according to C. S. Ching, director of public and industrial relations for U. S. Rubber Products, Inc., who addressed a round-table meeting on labor problems.

"If our employes do not know enough to defend the company when

it is attacked, they we are in a bad way," said Mr. Ching.

"On the other hand," he continued, "there is very little use in telling the public about the virtues of a particular company if the people who are closely connected with it—the employes—have a different viewpoint."

It is impossible to separate public and employe relationships, according to Mr. Ching, who insisted that the whole structure of good employe relations begins with building of confidence in the organization and its management.

"The place to start with employes," he said, "is to begin by expecting them to do their best, not their worst. If we expect the worst of anyone we will usually get it, but if we have sufficient confidence in our employes to believe that they want to do their best, then that is what we will get."

Emphasizing throughout his talk the necessity of a realistic attitude in dealing with employe relations, Mr. Ching said:

"Why don't we, instead of getting our impressions about organized labor leaders from others, and having them get their impressions of us from others, sit down together and discuss our mutual problems, realizing that there will always be substantial differences of opinion. But, if we could, over the period of the next two or three years, succeed in reducing the area of conflict that now seems to exist, that would be a real accomplishment."

In introducing Mr. Ching, W. Gibson Carey, Jr., president, Yale & Towne Mfg. Co., advanced the opinion that industry must sell the American people on the basic idea that fixed wages, fixed interest, and fixed rates of return on investment are against the best interests of the country at large, and that legislative efforts to freeze these factors are undesirable.

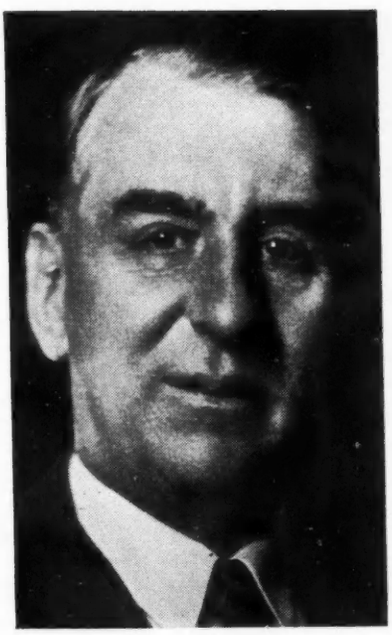
The people must also be educated to understand, he said, that there is no such thing as economic isolation. We are dependent to a large extent, and always will be, on our foreign trade, and we must expect to have to make some concessions in order to maintain it.

"Laws which in the first instance have affected chiefly the producer and distributor now are reaching down to the general public," is the view of Pyke Johnson, vice-president of the Automobile Manufacturers Association, who discussed "Legislation" before a meeting of the American Trade Association Executives held concurrently.

"Unless major issues emerge to change the course of legislation, this commentator, for one, believes that the outstanding point of view which will find consideration in the next session of Congress is that of the consumer. Business will do well to steer its course accordingly," he concluded.

Frank T. Sheets, president of the Portland Cement Association, pointed out to a round-table meeting on transportation that "a recent survey conducted by the State highway departments and reported in the April issue of *American Highways*, shows that today there are over $3,600,000,000 worth of badly needed highway improvements on our main trunk highway system alone.

"It is very obvious," he said, "that we have not reached the saturation point in highway development. On the contrary, we face an era of unprecedented highway development, all of which can be had without increased taxation if we plan intelligently and use our highway funds wisely."



C. S. CHING

"Why don't we . . . sit down together and discuss our mutual problems . . . ?"

Trends in automobile insurance legislation were outlined to a round-table conference on insurance by S. Bruce Black, president, Liberty Mutual Insurance Co., Boston. Summarizing his view that the problem of the automobile accident and the losses it causes is far from settled Mr. Black said:

"Compulsory insurance under the negligence system; improving present judicial procedures to make the negligence system more equitable and efficient; changing the negligence law itself to broaden the rights to compensation for automobile injuries are, and seem certain to become increasingly, matters in which the public and their legislatures are interested. Out of this interest important changes appear probable."

A. E. Raymond, vice-president, Douglas Aircraft Co., discussed for Chamber delegates "The Requirements of Expanding Aviation as Affected by Future Trends in Commercial Airplane Design," and Dr. James Thomas, president of the Chrysler Institute of Engineering, gave his address on "What the Machine Has Done for Mankind," before a dinner of the American Trade Association Executives.

Goodrich Workers Vote

Akron members of the Goodrich local of the United Rubber Workers Union of the CIO voted, Wednesday, May 4, as to whether they would accept a 12½ per cent wage cut to keep the company from transferring at least 5000 jobs out of Akron. Completely reversing their original stand when they voted almost unanimously not to hold an official referendum on the company's wage-cut proposal, unionists at a mass meeting April 28, voted overwhelmingly to formally vote on the proposal after the Goodrich management had flatly turned down the union's compromise offer of a 7½ per cent cut.

Out of 6500 union workers eligible to vote only 2461 cast their ballots. The proposal was rejected by a vote of 2251 to 210.

In view of the fact that the number voting represented only 26 per cent of the total number of Goodrich employes, and less than 38 per cent of the union men declared eligible to vote by the URW, it was predicted in Akron industrial circles that the validity of the vote would be questioned.

Prediction was that the company would either recommend a referendum of all company employes or arbitrarily post and enforce the new wage rate.

NLRB Reopens Ford Case

The National Labor Relations Board on Monday filed a motion in the circuit court of appeals at Covington, Ky., to withdraw its decision against the Ford Motor Co. and at the same time indicated that the Republic Steel case and others will be reopened.

Business in Brief

Written by the Guaranty Trust Co., New York

Economic developments last week contained little of encouragement. The business index compiled by the "Journal of Commerce" stood at 69.2, as compared with 70.2 the week before and 104.1 for the corresponding period last year. Statements by the Secretary of the Treasury regarding the business situation and the appearance of additional unfavorable first-quarter earnings reports accentuated the prevailing feeling in business and financial quarters.

Railway freight loadings during the week ended April 23 amounted to 523,767 cars, which marks a decrease of 13,818 cars below those in the preceding week, a decline of 232,481 cars below those a year ago, and a drop of 142,182 cars below those two years ago.

According to the Federal Reserve Bank of New York, department store sales in that district during March were 12 per cent below those in the corresponding period last year. However, Easter sales last year took place in March. Sales during the three weeks ended April 16 were 2 per cent above those in the corresponding period last year.

Production of electricity by the electric light and power industry during the week ended April 23 were 10.8 per cent below those in the corresponding period last year.

According to the Secretary of Labor, non-agricultural labor in March showed a moderate decline. Ordinarily between 200,000 and 300,000 workers return to industrial employment in that month, whereas the number declined by 50,000 this March. The drop in employment since March, 1937, amounts to 2,450,000.

Lumber production during the week ended April 16 stood at 52 per cent of the 1929 weekly average. Output last week was slightly below the level in the preceding week, while shipments and new orders gained appreciably.

Professor Fisher's index of wholesale commodity prices during the week ended April 30 stood at 80.6, as compared with 81.0 the week before and 81.1 two weeks before.

The consolidated statement of the Federal Reserve banks for the week ended April 27 showed a decline of $2,000,000, in holdings of discounted bills. Bills bought in the open market and Government securities remained unchanged. Money in circulation declined $6,000,000, and the monetary gold stock increased $19,000,000.

Sheppard Bill Drafted for Educational Orders

Chairman Sheppard of the Senate Military Affairs Committee has drafted a bill to empower the War Department to go ahead with educational orders, relaxing the present requirements for ordering on an open competitive basis.

Sponsors point out, however, that under such a law bids will be asked in accordance with the Government's established procedure but that orders will be distributed among manufacturers equipped to furnish the required materials. It is all part of the War Department's general plans to remove the "bottle neck" standing in the way of adequate national defense preparations.

Officials of the department describe the bill as contemplating a "pilot" production authority rather than a "quantity" production authorization. The bill provides that the first educational orders may call for gages, dies, jigs, tools, fixtures and other special aids, including drawings. In the event of an emergency, the various manufacturers will have familiarized themselves with the Government requirement, and be in a position to manufacture the munitions or accessories on a production basis.

The Secretary of War would be given jurisdiction over contract awards, which also would require the approval of the President. "In the determination of which classes of special munitions are to be manufactured under this act, and in the determination of which of the solicited bidders is to be awarded any contract," the bill provides "the Secretary shall have regard solely to the selection of such classes of special munitions and of such bidders as will, in his judgment, under all circumstances, best serve the cause of national defense."

Toledo Steel Reports Increase

Toledo Steel Products Co., a division of Thompson Products, has reported a sales increase of 16 per cent covering all lines of products for the first quarter of 1938 as compared with the same period in 1937.

J. Adams, sales manager, said the general sales increase of 52 per cent scored in 1937 was not only held but bettered in the "hard months" of the current year. Aggressive jobber merchandising and general demand for replacement parts was credited with the betterment.

Reports Indicate Ford May Produce Light Tractor

Recurring newspaper reports indicate that Ford plans early production of a light-weight, low-cost farm tractor. Official confirmation of these reports has been lacking, however, indicating that the tractor may be one of Ford's personal interests, as the only things that have been announced are what Ford himself has said to newspaper men in occasional interviews.

Reported as being convinced that a back-to-the-farm movement would precede a new era of prosperity in the United States, Ford was quoted as saying: "Cheap tractors and low-cost farm implements are a great need in this connection. We have been testing two tractors, and they perform to my entire satisfaction. We will begin production as quickly as we can. They will be light, powerful and efficient; designed to do almost everything on the farm."

Hollingshead Celebrates Golden Anniversary

Fifty years ago when the horseless carriage was yet unheard of, a young man, tall and energetic, set himself up in business at Camden, N. J. His total wealth was 50 cents. With this, he had a recipe for making harness dressing which his father had given him.

That was in May, 1888, and young Richard M. Hollingshead was celebrating his twentieth birthday. He had taken his father's recipe, mixed up a batch of harness "soap" over a kitchen stove and started out.

Thus was the humble beginning of the three million dollar R. M. Hollingshead Corp. which celebrates its golden anniversary this month. Today the manufacturer of Whiz products stands as one of the world's largest producers of automotive chemicals and lubricants, with factories in Camden and Toronto.

R. M. Hollingshead still the active head of the business celebrates his seventieth birthday this month. Associated with him now are his two sons, R. M. Hollingshead, Jr., who is vice-president in charge of production, and Stewart Hollingshead, vice-president in charge of sales. R. M. Bagley closely associated with the founder of the business for the past quarter century is also vice-president of the corporation.

. . . *slants*

DECRIERS—*The board of directors of the National Association of Manufacturers recently released a statement decrying the effect of "pump-priming" to stimulate business without encouraging private enterprise. Offering a seven-point program for reviving business activity, the board said, "If confidence can be restored and the flow of capital into private enterprise stimulated, not retarded, expenditures will be brought into being that would dwarf any possible sums that might be raised by Government for relief and would give employment to millions of men and women who want work and not a dole.*

"There are billions of dollars of expenditures waiting to be made once

industry can move forward with some reasonable certainty of the future. Estimates range from twenty to fifty billions of dollars. The public utilities alone estimate that they would spend several billion dollars within the next few years upon needed expansions if investment capital could be given the hope of legitimate profit. Railroads are badly in need of new equipment. Manufacturing plants need rehabilitating."

MARKET—*Automotive vehicles are being placed in service at a rate of about* 2000 *per month in the Federal District, Mexico. This includes Mexico City and is Mexico's greatest population center, having* 1,300,000 *residents, according to the municipal traffic department.*

The department states that Mexico City started 1938 *with the following automotive vehicles registered for regular service: private automobiles* —22,442; *official cars*—1147; *for-hire cars*—4445; *buses*—1611; *trucks* —5085; *official trucks*—564; *for-hire trucks*—875; *general public service trucks*—287; *motorcycles*—988; *cars and trucks for demonstration purposes*—321.

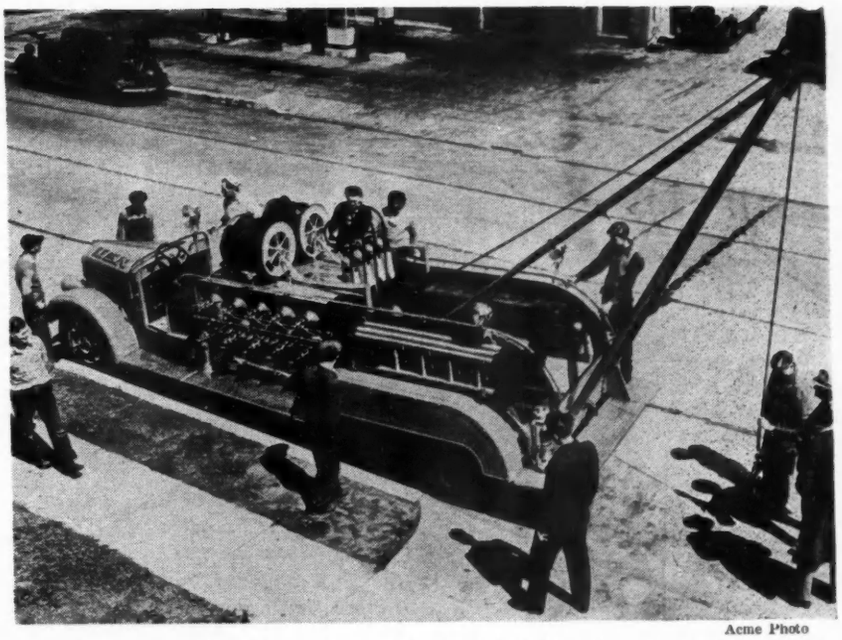
SAFETY—*A continuing safety activity, built around advance safety surveys and individual investigation of every lost-time accident for corrective action, has been launched at the Pontiac Motor division of General Motors.*

A personalized angle, whereby each individual accident will be brought to the attention of all workers in the plant, is an important feature of the new program. Departmental ratings on accident prevention, similar to baseball scores, are to be a continuing feature.

They are investigating any hazards or accident conditions with a view to their elimination. Results of these surveys are then officially recorded for corrective action by the management.

In the event of lost-time accidents even after such corrective measures have been taken, the cause of such accidents shall be determined by an investigation and the cause eliminated.

Said Safety Director Dean Thompson, "We plan to personalize the campaign by erecting a poster of a life-size figure in the main plant cafeteria, so designed that when any lost-time accident occurs the complete history of that case will be told in a block of type on the poster, and an arrow will point from the type to that part of the life-size figure which the lost-time accident affected.



Acme Photo

CRASH TRUCKS One of three $10,000 six-wheel "crash trucks" just completed for the United States Navy to serve at Pacific Coast air bases. The trucks are capable of traveling at a speed of 50 m.p.h. and each is equipped with a crane, several searchlights, and ten 100-lb. tanks of carbon dioxide for use in smothering gasoline or oil fires. An emergency crew of 15 men will be carried on each unit.

Studebaker Financial Report

According to the financial report released by President Paul G. Hoffman, the Studebaker Corp. had an operating loss of $1,072,352 in the first quarter of 1938, compared with an operating profit of $699,459 in the first quarter of 1937.

Earned surplus for the first quarter, 1938, showed a deficit of $48,316.92.

Foreign Rubber Trade Declines in First Quarter

The value of rubber goods exports from the United States during the first quarter of 1938 was 13.2 per cent lower than for the first quarter of 1937. As prices did not decline as sharply as did the trade, the decrease in the volume of exports was greater than the decrease in the export value, according to the leather and rubber division, Bureau of Foreign and Domestic Commerce.

Truck and bus casings, canvas rubber soled shoes, balloons, and scrap rubber were exceptions to the general decrease in exports. Exports of truck and bus casings numbering 55,279, valued at $1,083,070, showed an increase of 28 per cent in volume and 29 per cent in value, as compared with the first quarter of 1937.

Comparing the first quarter in 1938 with the corresponding period in 1937, the leather and rubber division announced that exports of auto casings, other than truck and bus, numbering 147,433 casings valued at $1,452,196, declined 29 per cent in volume and 52 per cent in value; exports of auto inner tubes valued at $210,524 declined 13 per cent in value with an equal decline in the volume of exports; exports of automobile fan belts declined 28.2 per cent in volume and 33.7 per cent in value.

40 Years Ago

with the ancestors of AUTOMOTIVE INDUSTRIES

New Home of the American Motor Co.

"One of the encouraging signs of progress in the motor industry is the new factory of the American Motor Company, 24-28 West Street, New York.

"Motors of ¾, 1½, 3, 4 and 5 hp. are being manufactured in quantities for stationary, marine and vehicle purposes. One hundred motor tricycles on the order of the De Dion now so popular in France are in process, as well as three motor carriages; two for customers and one for themselves, the latter showing a new variable speed transmission of their own devising.

"Aside from the above products specialties will be made of a friction clutch and a patent ignition device for gas motors."

From *The Horseless Age*, May, 1898.

Automotive Metal Markets

Outlook Favorable in Widespread Steel Orders

Approach of the time for announcement of third-quarter steel prices so far has not brought out the usual crop of guesses. Producers as well as consumers are scanning the horizon for indications when, under one influence or another, the prevailing dead calm will give way to more favorable conditions, and until then little more than marking of time is looked for in the steel market. In comparison with aggregate volume of buying by automotive consumers, the number of orders being received by mills is heartening, denoting a wide spread of light consuming activities rather than better-than-average takings by some and no buying at all by others. While, according to American Iron & Steel Institute's figures for this week, only 30.7 per cent of ingot capacity is operating, compared with 32 per cent last week, reports regarding finishing operations indicate that on the whole the pace is unchanged.

Under the untoward influence of an increase in the world's visible supply to more than 30,000 tons, tin prices moved into sharply lower ground at the beginning of the week, when 35 cents was chalked up for spot Straits, a decline of approximately $35 a ton from last week's closing quotation and 37 per cent below what tin sold for a year ago. Reports persist that after all a referendum is to be held on the buffer pool in Malaya, and that, the market having dipped as low as it has, this measure of artificial restoration is likely to come in for favorable action. On Tuesday, the market yielded further ground, spot Straits being offered at 34⅞ cents.

Actual consumption of copper in the form of fabricated copper and brass products is reported to be running ahead of domestic sales of electrolytic copper by the large producers. The quotation of the latter remains unchanged at 10 cents, but outsiders were offering metal early this week at ¼ cent below the price of producers. Cables from London exerted a weakening influence on the market. The export price held at around 9⅝ cents.

Manufacturers of secondary aluminum alloy ingots reduced their prices for No. 12 alloy by ½ cent per lb. The market for virgin aluminum is unchanged and strictly routine in character.

European markets cabled lower prices for zinc, but this had no effect on prices here.

Storage battery manufacturers continue to buy lead only in such tonnages as they need for nearby production. The market is holding fairly steady at unchanged price levels.—W. C. H.

Production

(Continued from page 615)

Out of the week's total General Motors divisions are expected to account for close to 22,000 units, followed by Ford with 16,000 and Chrysler with close to 12,000. There have been slight downward revisions at Hudson, Studebaker, Nash and Willys, but modifications were not sufficient to affect the week's total output to any great extent.—J. A. L.

Labor

(Continued from page 615)

settlement of a strike which had been in effect since April 19. Members of UAW Local No. 208 voted to accept terms of a settlement which had been reached during negotiations between the company and representatives of the union. Terms of the agreement were not announced.

Members of UAW Local No. 212 were to vote this week on terms of a new agreement between the union and the Briggs Mfg. Co., which had been under negotiation for a number of weeks. The former contract expired on April 17 and terms of the new contract were not to be announced until members of the union had voted upon them.

Negotiations were still under way between the UAW and Detroit Molding Corp., and also Michigan Steel Casting Co., where strikes were under way. Tool and Die Locals 155 and 157 have elected a committee to seek individual contracts with 60 tool and die jobbing shops after failing to negotiate a blanket contract to succeed the former blanket contract which expired on May 1.

Plants of Gar Wood Industries, Inc., resumed operations on April 28 after negotiations had settled a two-day strike. The company has agreed to negotiate for a new contract calling for no wage cuts and substitution of a straight piecework system for the Bedeaux system. At the same time Gar Wood, president, announced immediate beginning of a profit-sharing plan with employes, excluding salaried employes receiving over a stipulated sum, whereby the workers will receive 20 per cent of all declared dividends, the revenue for which will come from company profits. At the same time Mr. Wood announced a 50 per cent reduction in his own salary to permit employes to participate in earned profits.

Reports of factional differences within the UAW continue to break out. Latest difficulties are said to be between Homer Martin, UAW president, and Richard Frankensteen, assistant president, after the latter had sent a letter to members of the UAW general executive board outlining certain steps which should be taken to end factionalism. Martin has openly criticized Frankensteen for his action and both have issued conciliatory statements explaining their stand.

"Sitdown" Strike Called at Allis-Chalmers

Climaxing a period of contract negotiation between Allis-Chalmers Mfg. Co. and UAW Local No. 248 through mediation conferences with the State labor board, the CIO pulled the switches and "sat down" peacefully in every department of the West Allis tractor works at 9:30 Wednesday morning. This move was a surprise to the public and management since, late the previous evening, Msgr. Francis J. Haas, labor board spokesman, had advised that the strike call had been deferred.

The "sitdown" brought to a head the negotiations for a renewal of the union contract which expired several weeks ago. It is understood that the company was willing to renew the contract on the same terms and had even offered to guarantee the present hourly basic wages. However, the CIO has taken a stand on three basic provisions on which there seems little compromise at this writing. Specifically, the CIO wants exclusive control of all workers in all Allis-Chalmers plants. Another provision upon which CIO insists is unlimited seniority rights with all promotions based on seniority. The company now has the right to appoint a certain percentage on the basis of efficiency and skill. The third basic point is that of unlimited steward rights giving stewards complete control of contacts between the workers and management, short circuiting the foreman as a party in this relationship.

As we go to press, the company has made no public statement. However, it seems doubtful whether the company will accede to the demands.

Withrow-Minton Investigation Started

Martin Bill Backers Muster Support as Preliminary Studies Get Under Way

Preliminary investigation under the Withrow-Minton resolution into automobile manufacturer-dealer relations has been started by the Federal Trade Commission. The inquiry is under the direction of Francis Walker, chief of the Economic Division. As it proceeds its scope will be broadened to include the numerous objectives set out in the resolution, necessitating addition to the FTC economic staff to be engaged in the work. Beginning of the investigation was delayed pending the completion of the FTC "monopoly" and farm agricultural implement reports, and failure of Congress to act on an appropriation of $50,000 to conduct the Withrow-Minton investigation. The appropriation now will be asked in a deficiency bill.

It is not known how much time will be required to complete the inquiry, which will be made despite the fact that subjects to be studied are included in the trade practice code agreed upon at the Detroit meeting of April 26. The investigation will call for extensive correspondence and personal contact with automobile makers and dealers, but no hearings are planned.

Meanwhile, Congressional advocates of FTC investigations of related industries were busy mustering support for a bill introduced by Representative Martin, Democrat, of Colorado. It called for a Trade Commission investigation of motor-vehicle tire manufacturers and the distributing methods for the purpose of determining any violation of the anti-trust laws.

Both distributing policies covering retail dealers and retail outlets controlled by the manufacturers were included in the scope of the contemplated inquiry. The FTC would report its findings to Congress not later than January, 1939, with recommendations for any remedial legislation it considered necessary. No sum was suggested to cover the cost of the investigation and sponsors said that could be determined and written into the bill after public hearings.

Representative Martin introduced his resolution after the Senate Interstate Commerce sub-committee of which he is chairman declined to report favorably on the Patman bill designed to divorce manufacturing and retailing functions.

Patman, co-author of the Robinson-Patman anti-price discrimination law and other bills written in defense of the independent retailer, introduced the measure at the request of the National Association of Independent Tire Dealers although the bill would outlaw direct sales by all manufacturers where the effect was to substantially lessen competition between the manufacturer and his established customers.

The measure also had the endorsement of NADA and other groups of independent retailers. The Rubber Manufacturers Association were among those opposing the bill. The secretary of the association wrote the sub-committee that existing anti-monopoly law prevents any injury resulting from direct selling by manufacturers and hence the Patman bill was unnecessary. The letter added that the measure might tend to promote monopoly instead of curbing it where found to exist.

Figures presented to the sub-committee by the tire dealers group showed that six tire-manufacturing companies owned and operated 1937

(Turn to page 625, please)

American Broach & Machine Co. has released a folder on its type V-2—six and twelve ton **hydraulic presses.***

A bulletin on its new type **flexible hose**, "Avioflex," has been published by the Chicago Metal Hose Corp.*

Wickwire Spencer Steel Co. has published an illustrated booklet on its **chain link fence.***

A new bulletin, issued by the Niagara Machine & Tool Works illustrates and gives specifications on its series K **power squaring shears** with capacities up to ½ in.*

A booklet has been published by the Erie Foundry Co. illustrating and describing **steam and air drop hammers.***

Bulletin No. 14, by the Tinius Olsen Testing Machine Co., describes the vibro-electric, static-dynamic, **balancing machines.***

Two bulletins have been issued by the Elwell-Parker Electric Co. describing its type E-2 **high lift platform trucks** and type F-8 **tiering fork trucks.***

A booklet on **precision needle roller bearings and needle rollers** has been released by the Norma-Hoffman Bearings Corp.*

* Obtainable from editorial department, AUTOMOTIVE INDUSTRIES. Address Chestnut and 56th Sts., Philadelphia.

Tire Week Set in Face of Low Retail Stocks

Dealers Unprepared to Handle Expected Increase

As tire manufacturers set the stage for their cooperative National Tire Safety Week (May 14-21) and plan to launch their build-up May 12 for the greatest coop selling movement the industry has ever known, they run hard up against the fact that dealers, from a stock position, are woefully unprepared to handle the extra consumer tire and tube business which the drive is expected to produce.

Retail stocks not only are substantially below those of a year ago, but are below stocks of January 1, indicating that dealers liquidated their stocks during the first quarter year. This means that, with the industry upon the threshold of its heaviest tire selling period of the year, retail stocks are inadequate for even a normal summer business, let alone the extra bulge in consumer tire buying which manufacturers anticipate will accrue from their cooperative advertising campaign. The campaign gets under way May 12 with a series of newspaper advertisements in some 300 cities, directed by Campbell & Ewald agency of New York City.

Reports from the Department of Commerce on its April 1 quarterly census of retail stocks shows that these stocks were lower than on any previous quarterly survey date since April, 1936. Stocks of retail outlets surveyed were 5,852,000 pneumatic casings this April, against 5,973,000 on January 1, and 6,622,000 on April 1, 1937. Stocks of major independent tire dealers were 1,932,000 this April, against 2,465,000 a year ago. These dealer stocks January 1 were 1,938,000 units. Oil companies reported 1,853,000 tires in April, 1937; 2,115,000 on January 1 and 1,869,000 April 1 of this year. Seven tire manufacturers operating 1999 retail stores and six mail-order houses and chain stores with 1,896 outlets, reported stocks of 2,304,000 tires a year ago, 1,920,000 January 1 and 2,051,000 on April 1 of this year. The dealer figures cover 1,430 major dealers. The government no longer surveys the stocks of 45,000 or more smaller dealers, estimating their stocks at between 1,000,000 and 2,000,000 with a minimum fluctuation.

May, June, July and August are normally the heaviest tire buying months of the year, with the con-

(Turn to next page, please)

sumer rush starting just before Memorial Day. In these four months replacement sales normally run approximately 50 per cent of the year's total. On the basis of a 30,000,000-year, this would mean 15,000,000 tires. If National Tire Safety Week increased consumer buying as much as the industry hopes it will, then the retail stock position is even more serious, and all types of distributors will have to order heavily for quick delivery in order to meet the anticipated consumer demand.

Heavy distributor ordering will put a burden on manufacturers, whose own stocks are lower by nearly 2,000,000 tires than they were a year ago. Furthermore, inventories of manufacturers and distributors are not in balance with the relative popularity of tire sizes. This means that manufacturers will be forced to step up production briskly during the next 90 days.

The industry produced only 7,713,998 tires in the first quarter of 1938, against 16,141,643 in the same period of 1937. Shipments were 7,716,198, against 14,666,921 a year ago. Inventories April 1, 1938, were 10,808,419, against 12,448,167 a year ago. The sharp drop in production in the first quarter was due largely to slack original equipment orders from car manufacturers. The major tire companies providing the primary market look for a comparatively lean year this year and are revising earlier estimates downward.

Machine Tool Convention

The 36th annual convention of the National Machine Tool Builders' Association was held in Chicago, May 2 and 3. Among the papers presented were, "Reciprocal Tariffs and Machine Tools," by L. W. S. Alter, president of the American Tool Works Co.; "Some Recently Adapted Technical Standards Applicable to Machine Tool Design," by J. E. Lovely, vice-president and chief engineer of the Jones & Lamson Machine Co.; "Procurement Planning and the Machine Tool Industry," by W. W. Tangeman, vice-president of the Cincinnati Milling Machine Co.

GM Dividend

The directors of General Motors Corp. at their recent meeting declared a dividend of 25 cents per share on the outstanding common stock, payable June 13, 1938.

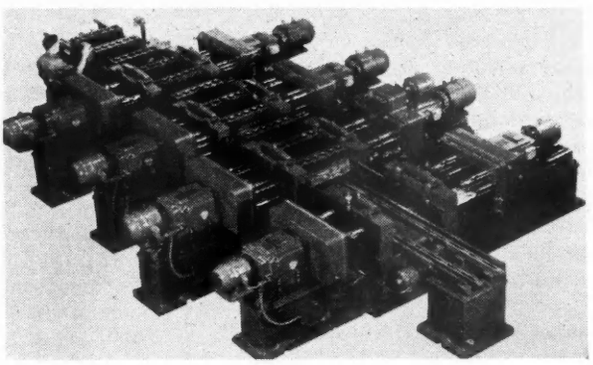
The regular quarterly dividend of $1.25 per share was declared on the $5 preferred stock, payable Aug. 1, 1938.

TOOLS OF TOMORROW

Multi-Driller and Tapper

. . . Natco machine performs 47 operations on two ends of engine block.

The National Automatic Tool Co., Richmond, Ind., recently built a combination multi-driller and tapper for performing 47 drilling, chamfering, counterboring, reaming, and tapping operations on the two ends of an engine block. The machine is constructed of eight Natco "Holeunits," one Natco auxiliary reversing motor drive tapping unit and a straight-line mechanical indexing type fixture arranged to hold two cylinder blocks in each position.



Natco combination multi-driller and tapper

One operator loads the machine and completely controls its operation through the use of a single push-button station. Cylinder blocks come to the machine on a roller type conveyor, being positioned by the operator in the loading station. Once positioned, the blocks are indexed automatically from one station to another, and unloaded in the sixth station. The entire machine is electrically interlocked, and under normal operation, will perform the following operations at a rate of 90 blocks per hour.

Position No. 1
Load two cylinder blocks.

Position No. 2—(Left Hand Head—Front End of Block)
Drill oil gallery hole to required depth.
Drill 8 holes.

(Right Hand Head—Rear End of Block)
Drill oil gallery hole to required depth.
Drill 8 holes.

(Right Hand Head—Rear End of Block)
Drill oil gallery hole to required depth.

Position No. 3—(Left Hand Head—Front End of Block)
Drill oil gallery hole to additional required depth.
Drill 4 holes.
Chamfer 3 holes.

(Right Hand Head—Rear End of Block)
Drill 6 holes.

Position No. 4—(Left Hand Head—Front End of Block)
Drill oil gallery hole to additional required depth.
Rough core drill 1 welsh plug hole.
Spot drill 1 hole.
Drill 1 hole
Tap 2 holes.

(Right Hand Head—Rear End of Block)
Drill oil gallery hole to additional required depth.
Drill 3 holes.

Position No. 5 — (Left Hand Head — Front End of Black)
Drill oil gallery hole to additional required depth.
Finish core Drill and counterbore 1 hole.
Drill 5 holes.

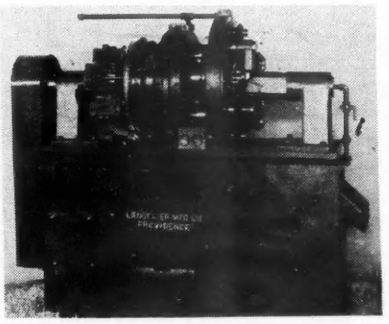
(Right Hand Head—Rear End of Block)
Combination ream and counterbore end of oil gallery hole.
Finish core drill and counterbore 1 hole.

Cap Screw Trimming

. . . Langelier designs machine for trimming heads of socket type cap screws after drawing operation.

A horizontal four-spindle continuous cap screw trimming machine was recently designed and built by the Langelier Mfg. Co., Providence, R. I., for trimming the head of socket type cap screws after the drawing operation.

The carrier revolves with four rotating collet type chucks, and a fixed cam operates the cutter levers.



Langlier cap screw trimming machine

Pieces are hand loaded and, after the turning operation is completed, they are ejected automatically.

Three motors are used on the machine: one for driving the spindles, a second for revolving the carrier, and a third on the lubricant pump which supplies a coolant to the tools.

The collet type chucks have interchangeable pads for handling No. 8 to 5/16-in. screws. Speed of the carrier is adjustable for various sizes, and the production rate is said to range from 1000 to 1500 pieces per hour.

Withrow-Minton

(Continued from page 623)

stores in 1937 as reported by the Commerce Department, and that in 1925 there were 150,000 independent tire dealers. George J. Burger association secretary, said that 100,000 of these dealers had since "disappeared."

The Rubber Manufacturers Association took exception to these figures, pointing out that any decrease in the number of tire dealers was due to a change of classification because many of the dealers carry a diversified line of products. It estimated that tires can be purchased from approximately 185,000 places in the country, less than 2000 of which are manufacturers' stores.

"There are today 36 tire manufacturers and the four largest companies in the aggregate sell through independent dealers and their own stores less than one-half of all the tires sold in the retail market," the association reported.

Italian Driver Entrant for Indianapolis Race

Foreign competition returns to the Indianapolis Speedway for the first time in eight years. Tazio Nuvolari, Italy's racing champion, has cabled his entry for the May 30 500-mile classic.

Nuvolari made his first appearance on this side of the Atlantic in 1936, when he won the 300-mile Vanderbilt Cup race in New York.

He will sail from Europe shortly with a crew of eight mechanics and a new one-man car, a 12 cylinder Alfa-Romeo.

Ford Canadian Sales

Sales volume in dollars of the Ford Motor Co. of Canada for the first quarter of 1938 was within 1 per cent of the corresponding period of 1937. Unit sales to Canadian dealers decreased 15 per cent, but sales to export territories remained at practically the same level, according to information given shareholders at the annual meeting by W. R. Campbell, president. Mr. Campbell regarded the Canadian company's experience for the quarter as encouraging, particularly in view of the trend of business in the United States. In 1937 Ford made 72,814 units, or 35.2 per cent of Canadian production, Mr. Campbell reported.

Calendar of Coming Events

CONVENTIONS AND MEETINGS

American Foundrymen's Association, Foundry Show, Cleveland....May 14-19
National Battery Manufacturers' Association, Spring Convention, Cleveland .....May 24-25
American Iron & Steel Institute Meeting, New York .....May 26
SAE Summer Meeting, White Sulphur Springs, W. Va. .....June 12-17
American Society for Testing Materials Meeting, Atlantic City, N. J., June 27-July 1
National Petroleum Association Meeting, Atlantic City, N. J.....Sept. 14-16
SAE National Regional Fuel and Lubricants Meeting, Tulsa, Okla..Oct. 6-7
SAE National Aircraft Production Meeting, Los Angeles, Calif...Oct. 13-15
American Welding Society Meeting, Detroit .....Oct. 17-21
SAE Annual Dinner, New York....Nov. 14
National Safety Council Meeting, Chicago .....Nov. 14-18
American Petroleum Institute Meeting, Chicago .....Nov. 14-18
National Industrial Traffic League Meeting, New York .....Nov. 17-18
SAE National Production Meeting, Milwaukee, Wis. .....Nov. 30-Dec. 1
Automotive Service Industries Show, Chicago .....Dec. 5-10
National Standard Parts Association Meeting, Chicago .....Dec. 9-10

SHOWS

New York, National Motor Truck Show, Nov. 9-15
New York, National Automobile Show, Nov. 11-18
Pittsburgh, Pa., Automobile Show, Nov. 11-18
Detroit, Mich., Automobile Show, Nov. 11-19
Columbus, Ohio, Automobile Show, Nov. 12-18
Buffalo, N. Y., Automobile Show..Nov. 12-19
Chicago, Ill., Automobile Show..Nov. 12-19
Milwaukee, Wis., Automobile Show, Nov. 12-19
Minneapolis, Minn., Automobile Show, Nov. 12-19
*Philadelphia, Pa., Automobile Show, Nov. 12-19
*San Francisco, Calif., Automobile Show .....Nov. 12-19
Los Angeles, Calif., Automobile Show, Nov. 12-20
*Elmira, N. Y., Automobile Show, Nov. 14-19
New Haven, Conn., Automobile Show, Nov. 14-19
Baltimore, Md., Automobile Show, Nov. 19-26
*Washington, D. C., Automobile Show, Nov. 19-26
*Cincinnati, Ohio, Automobile Show, Nov. 20-26
*St. Louis, Mo., Automobile Show, Nov. 20-27
Newark, N. J., Automobile Show, Nov. 26-Dec. 3
Denver, Colo., Automobile Show, Dec. 5-10

*Tentative

MEN OF THE INDUSTRY

EDWARD J. BEGUHN, formerly sales manager of the Pacific Coast region for Hudson Motor Car Co., has been made regional sales manager at Chicago.

STERLING B. McDONALD has been appointed director of color and design for Eagle-Ottowa Leather Co.

WILLIAM K. HARRISON, for several years retail sales manager of the McKinley-Gregg organization in Pittsburgh, has been named assistant sales manager of Willys-Overland Motors, Inc. He will assist in development of retail sales.

Norma-Hoffman Bearings Corp., Stamford, Conn., announces the appointment of **D. E. BATESOLE,** formerly assistant chief engineer, as chief engineer succeeding the late **GEORGE R. BOTT. T. E. ROUNDS** of the engineering department has been made assistant chief engineer.

Vascaloy - Ramet Corp., Chicago, announces the following additions to its sales engineering staff: **GEORGE M. MENCKE** as sales manager; **JAMES A. FRASER,** assistant sales manager; **A. M. KEBE,** district manager of Cleveland territory; **C. M. GRANNIS,** district manager of Detroit territory; **C. W. BLADE,** district sales manager of the New England territory; **WALTER J. DENNIS,** dies sales engineer with headquarters at Chicago; **M. W. DENNIS, JR.,** die sales engineer with headquarters at Pittsburgh; and **S. A. MINIEA,** sales engineer in the Chicago territory.

MILTON P. HIGGINS has been appointed resident manager of the Chippawa, Ont., plant of the Norton Co., Worcester, Mass. He was formerly manager of sales research. Mr. Higgins is also a member of the board of directors.

FRANK M. SPEAKER has been appointed sales supervisor by the A-P Parts Corp. His headquarters will be at the Toledo offices of the company.

D. W. PRICHARD is now covering the Chicago area for the Pennsylvania Salt Manufacturing Co., Philadelphia, Penna.

Independent Pneumatic Tool Co., Chicago, announces the appointment of **B. J. HERRON** as manager of its new Los Angeles sales-service branch.

WALTER F. WRIGHT has been appointed vice-president and general sales manager of Graham-Paige Motors Corp., succeeding **F. R. VALPEY,** who has resigned.

The Hisey-Wolf Machine Co., Cincinnati, has appointed **J. F. GRUBER** factory representative for the State of Wisconsin.

W. R. WIDDOES has been appointed general manager of the By-Products Steel Corp., Coatesville, Pa.

Sealed Power Corp. Warehouse

A new warehouse, representing an addition of 61,250 sq. ft. to the main plant, has just been completed by the Sealed Power Corp. of Muskegon, Mich. It will be used to store Sealed Power motor parts.

The warehouse is the second of three building projects begun a few months ago to be completed. A new addition to the office building comprising 4800 sq. ft., was finished in January. A new foundry is already being constructed.

THIS IS THE TWENTY-FIFTH IN THE SERIES OF MONTHLY PRODUCTION FEATURES

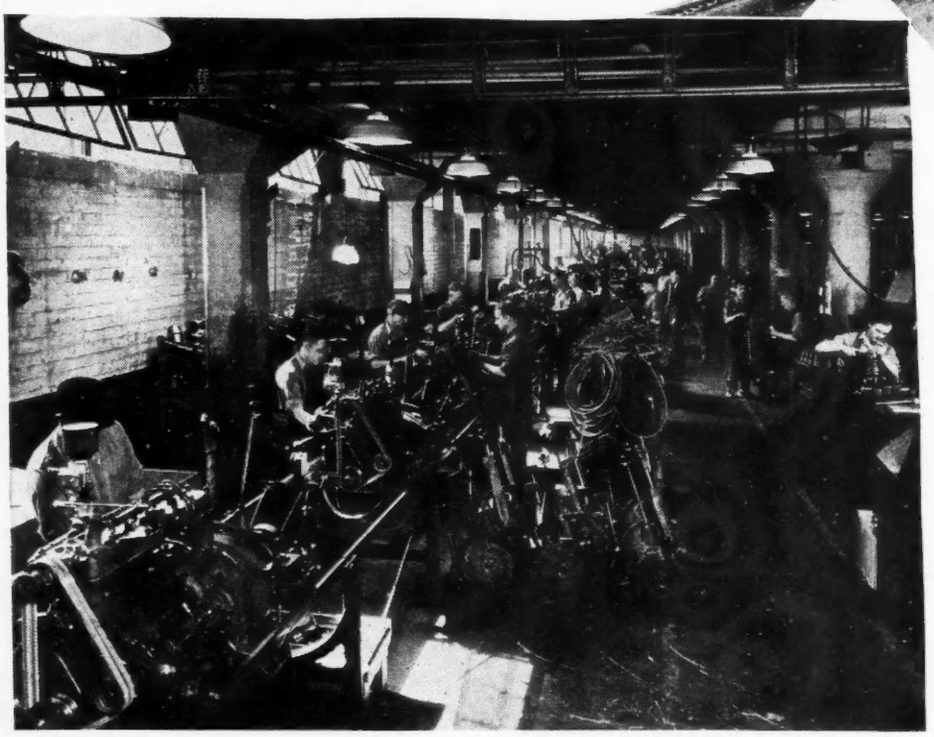
By JOSEPH GESCHELIN

THE White Motor Company, Cleveland, is in process of completing a modernization program involving $2,000,000.

The vital feature of the present activity as conceived by F. M. Bender, vice-president and general manager of the company, is that it encompasses not only the modernization of production facilities but a rational differentiation of manufacturing departments. As a result of this thinking, the plant has been divided into three distinct divisions—the coach division, truck division, and the unit parts division which serves as the purveyor to the assembly units.

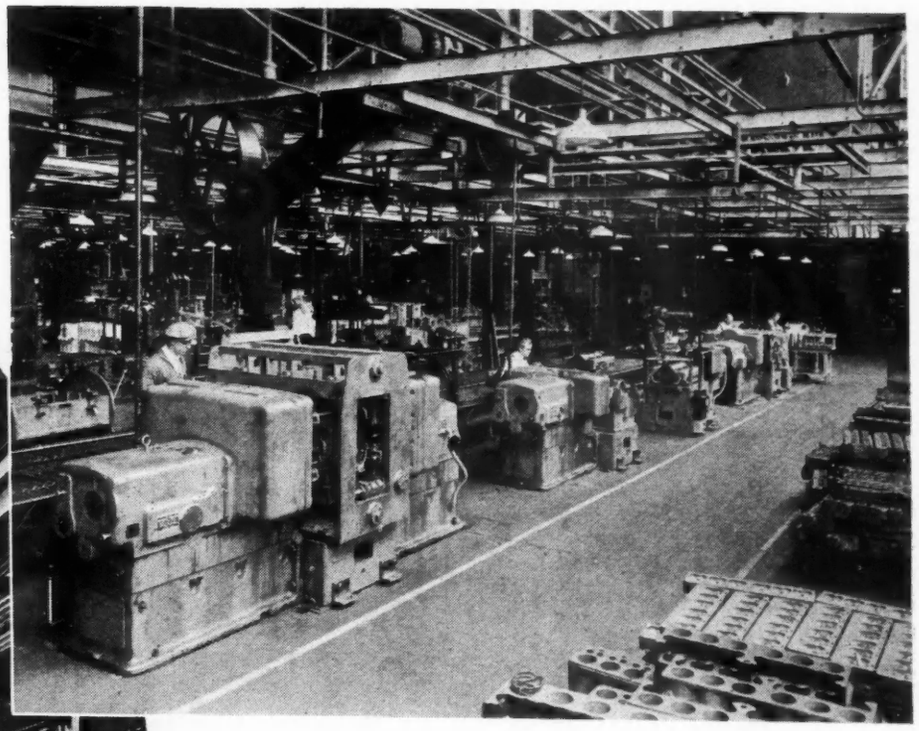
The first White gasoline truck—a 3-ton model—was exhibited at the New York Auto Show in 1910. One of the early models sold to the City of Cleveland in 1911 is still in operation, having accumulated a grand total of over 1,000,000 miles of service during the intervening years. Today, White builds a complete line of streamlined coaches and 26 basic truck models ranging in size from one to twenty-five tons' capacity and including four and six-wheel units.

These basic models with all the variety of options known to the fleetman are built on 1,500,000 square feet of productive floor space which also houses the facilities for building engines, transmissions, axles, and miscellaneous parts. The line of White engines consists of nine basic models—subject to a variety of options—rang-



(Above) Looking down the heavy-duty model final assembly line

(Left) General view of one of the engine assembly lines in the basement gallery directly under the final assembly lines on the floor above



Looking down the line of Ingersoll Power Pack machines tooled for the new 12-cylinder pancake bus engine

White Plant Modernized in $2,000,000 Program

ing from 250 to 681 cu. in. displacement.

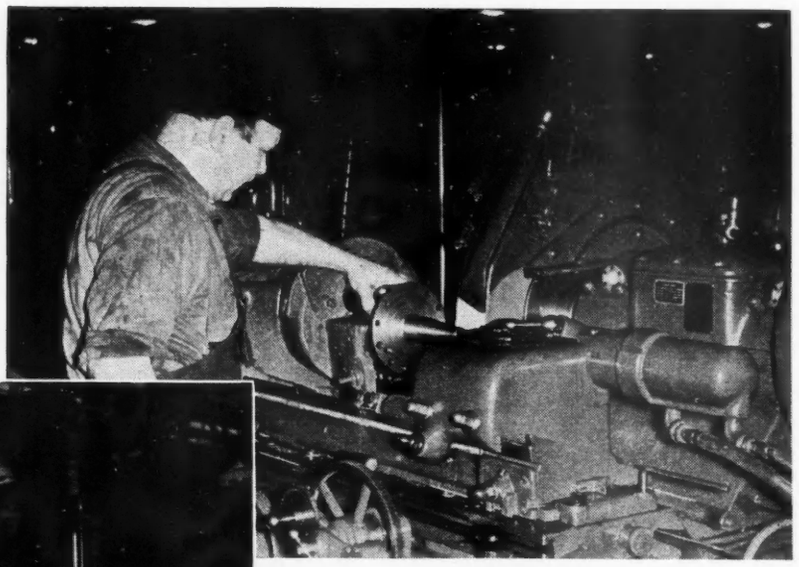
In analyzing this $2,000,000 modernization program, we find that part of the fund was expended in creating the three major divisions of the manufacturing set-up while a good part is accounted for in the installation of many items of new production equipment of every variety. However, the lion's share of the appropriation went into the construction of the new coach division whose entire conception has centered about the production of a light-weight all-aluminum structure mounted on an integral steel undercarriage.

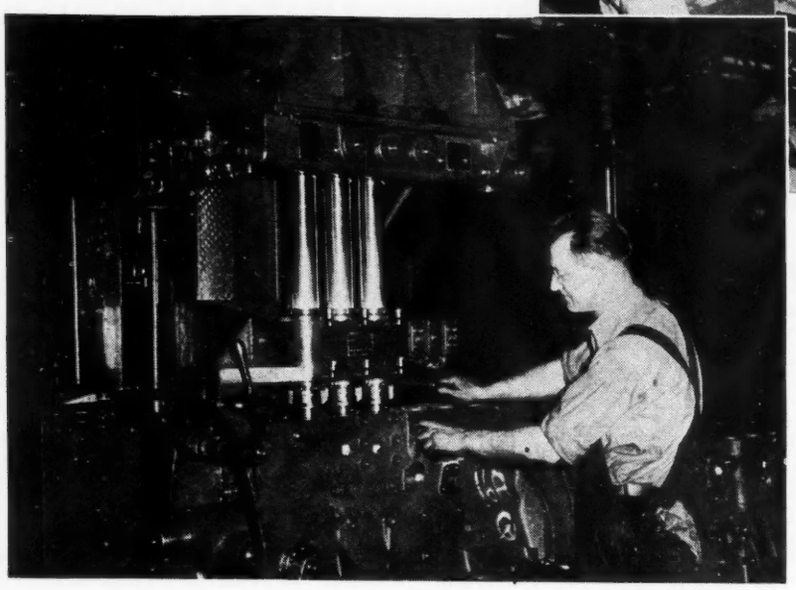
The huge 40-passenger coaches are assembled while suspended from a heavy-duty overhead conveyor line. The various parts of the structure—such as the roof, sides, and frame—are assembled on suitable framing bucks and then fed to the final assembly line.

Here, too, will be found a big installation of Mahon spray booths and primer baking ovens. Part of this equipment is used for spraying and baking prime coats on in-

(Right) Norton grinder is used for finishing steering knuckle bearings

(Below) Single-point precision boring machine recently developed by Baush is used to finish all cylinder bores in the line. The three-spindle set-up shown here will finish a six-cylinder block in two settings





dividual sheets and sections entering into the construction of the bus body. In addition, there are two huge spray booths and two separate ovens large enough to accommodate the biggest buses in the line.

Within the set-up of the basic operating divisions there is a situ-

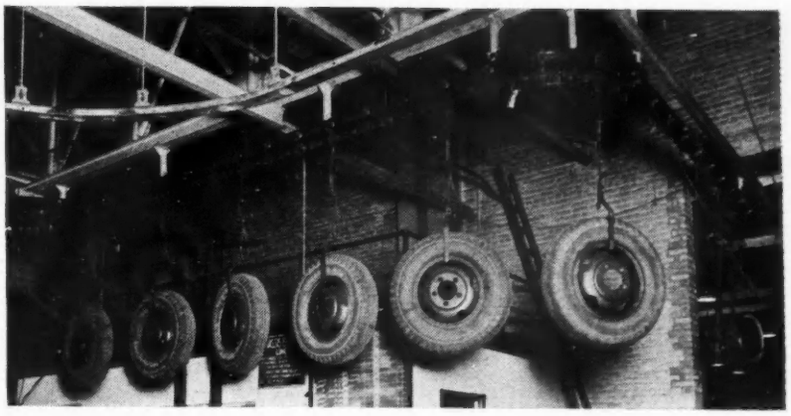
Rear Axle Drive Bevel Gear

OPERATION	EQUIPMENT
Heat treat	
Snag spot for Brinell test	Polish lathe
Rough polish spot for Brinell test	Polish lathe
Make indentation	Olsen testing machine
Pickle	
Inspect	
Rough turn face angle, notch angle, finish face flat and web, bore and form radius at large inside diameter	Gisholt Simplimatic lathe
Rough and finish face thrust screw face, differential face form radii, bore and chamfer pilot hole, stamp part number and trade mark	Gisholt Simplimatic lathe
Broach pilot hole	
Turn shoulder undercut thrust screw face and form radius	LeBlond engine lathe 19 in.
Inspect	
Drill rivet holes and file burrs	Multi-drill head on single special drill press
Inspect	
Finish grind flat on face angle	Blanchard surface grinder
Finish grind differential face and finish grind gear screw thrust face	Blanchard surface grinder

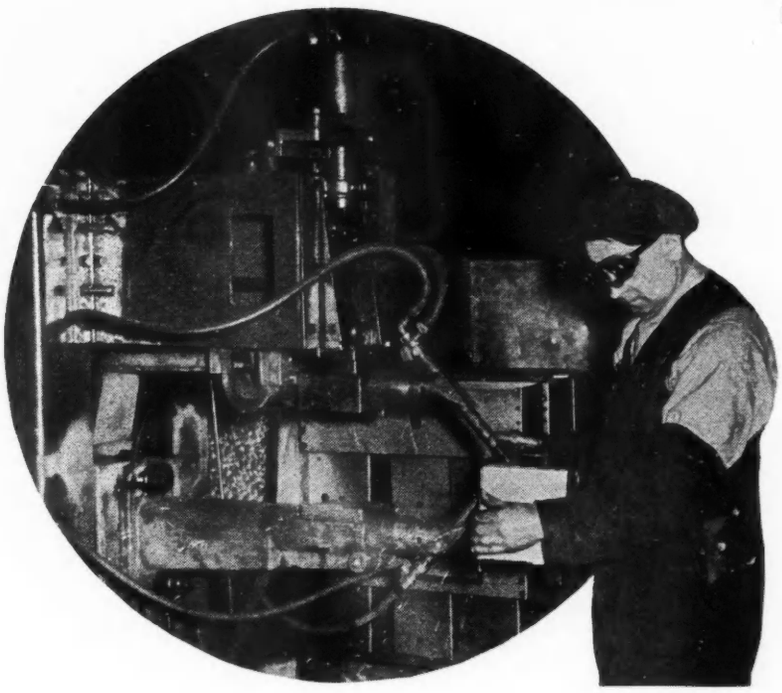
OPERATION	EQUIPMENT
Inspect	
Counterbore rivet holes	Multi-drill head on single spl. drill press
Countersink rivet holes	24 in. Reed-Prentice drill press
Finish turn teeth angles and form radii	Fay automatic lathe
Inspect	
Rough cut teeth	Gleason spiral gear generator
Chamfer teeth coast side, finish cut teeth and file burrs	Gleason spiral gear generator
Mill chamfer on teeth toe and inspect and stamp ratio and date	Hand mill
Heat treat	
Sandblast (4 passes)	Pangborn sand blast machine
Brinell test (final)	Olsen tester
Inspect	
Grind pilot diameter and differential face	Greenfield hydroil grinder
Grind back cone angle for checking purposes	Brown & Sharpe universal grinder No. 3
Inspect	
Grind flat on face angle	Blanchard surface grinder
Grind screw thrust face	Blanchard surface grinder
Inspect	
Stores	

ation rather unique in automotive circles. For example, each division now has its own engineering department, its own production, planning, and tool design, and its own purchasing department. This makes each one an independent operating unit, drawing upon the unit-parts division as an outside purveyor.

Following this pattern, each division has its own finish-stores and tool cribs, located most convenient-



Part of the monorail feeder conveyor for the high-production assembly line



are made by torch welding. The under floor engine and all running gear parts are mounted in the lightweight, high-tensile steel underframe which is made an integral part of the body at final assembly.

According to W. C. Naegel, manager of the coach body division, the aero-weight construction is responsible for a great measure of operating economy. Consider that the current 40-passenger job compares as follows with the corresponding model of previous design:

Weight saving of 1500 pounds for the shell alone.

ly at points of usage. The handling of rough stock conforms to a principle currently taking hold in many plants, namely a complete elimination of rough-stores as such, and the adoption of the scheme of having the suppliers deliver rough stock directly to the first productive operations.

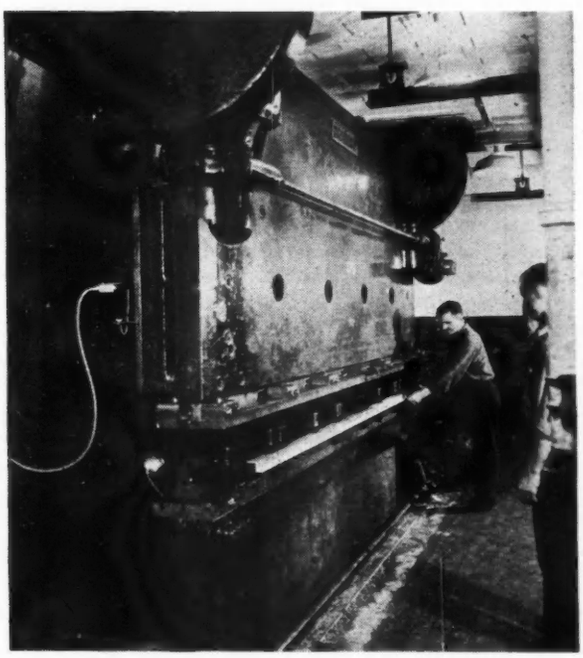
The general character of the machine shops and assembly lines at White remains about the same, since the coach division is the only really new department.

Coach Division

The whole plan for the layout of the coach division plant is based upon the engineering philosophy of the "aero-weight" all-aluminum coach structure, composed of formed aluminum sheets with a framing of special extruded sections as well as standard aluminum rolled sections. Assembly is chiefly by riveting, although certain joints

(Circle) Press shop boasts this new Federal resistance welder fitted with timing control, water-cooled electrodes, and other modern attachments

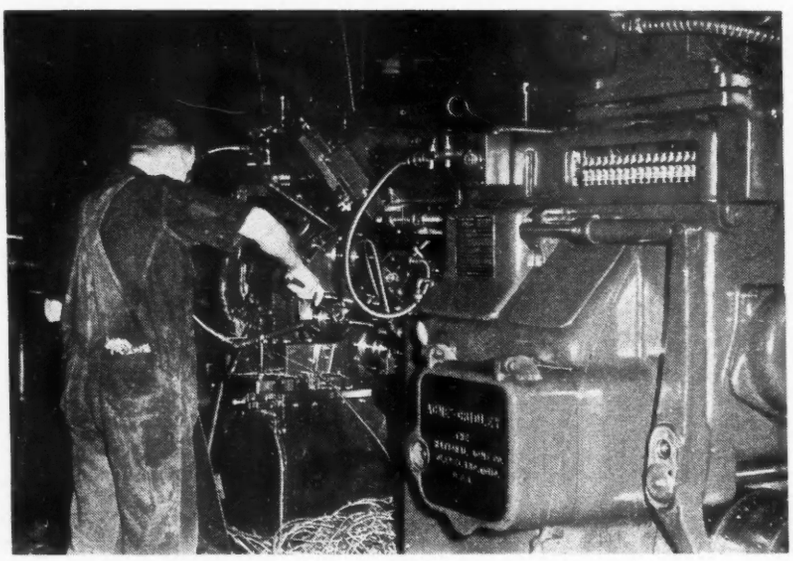
(Right) New Cincinnati shear in coach body plant is a massive machine with electric holddowns, having a shearing capacity of ¼-in. mild steel



Transmission Countershaft Third Speed Gear

OPERATION	EQUIPMENT
Inspect	
Heat treat	
Pickle	
Snag for Brinell test, polish spot for Brinell test	Polish lathe
Make indentation for Brinell test	Olsen tester
Inspect	
Drill, rough and finish bore and ream shaft holes, turn half of gear outside diameter, rough face rim and hub	Potter & Johnson 6D chucking lathe
Turn other half of gear outside diameter, face rim and hub and chamfer shaft hole and form chamfer at gear outside diameter and stamp part number and trade mark	Potter & Johnston 6C chucking lathe
Size broach hole	Oilgear broach H4
Reface both sides of hub	LeBlond engine lathe
Rough broach spline	Oilgear broach H4 horizontal
Rough cut teeth	Lees-Bradner gear generator
Finish point teeth (burr), repoint teeth to break sharp corner	Tooth pointing machine
Inspect	
Heat treat	
Sandblast (6 passes)	Pangborn sand blast machine
Polish for test (2)	Polishing lathe
Inspect	
Broach round hole	Lapointe broach, horizontal
Finish broach splines	Lapointe broach, horizontal
Inspect	
Finish face both sides of gear	Boye & Emmes engine lathe 18 in.
Finish cut teeth	Fellows gear shaper No. 612
Burnish teeth	Cincinnati gear burnisher
Wash	
Inspect	
Heat treat	
Sandblast (6 passes)	Pangborn machine
Inspect	
Grind bore, short hub & rim face	Internal grinder
Inspect	
Grind other end of hub face	Blanchard surface grinder
Demagnetize	
Wash	
Inspect	
Stores	

Screw machine department profited by the modernization program. Here is a new National Acme four-spindle screw machine, fitted with the Blanchard Pulsator, built-in automatic lubricaton system



Weight saving of 2000 pounds for the entire bus.

Moreover, the under floor engine permits the addition of five passengers within the same body space.

Materials of construction should be of great interest. For straight sheets they use 4S aluminum alloy; for formed panels, 52S alloy. Both alloys are suitable for welding. Roof structure is of 51S alloy; outside structure of 3S alloy. All special extruded sections are of 51S (heat-treated) alloy. Rivets are of 53S alloy which is stabilized so that no special precautions are required in storage.

Wherever the joints are welded, the weld is hammered to regain some of the original tensile properties by cold-working. All roof joints and glazing are sealed by the use of the special "alumelastic" sealer which remains plastic indefinitely.

In the plant layout, we find that all of the basic assembly and finishing operations are handled on the main floor while shearing, bending, and forming all are done in the basement gallery. Here, too, are located the storage racks for the special aluminum sheets, rolled forms, and special extrusions.

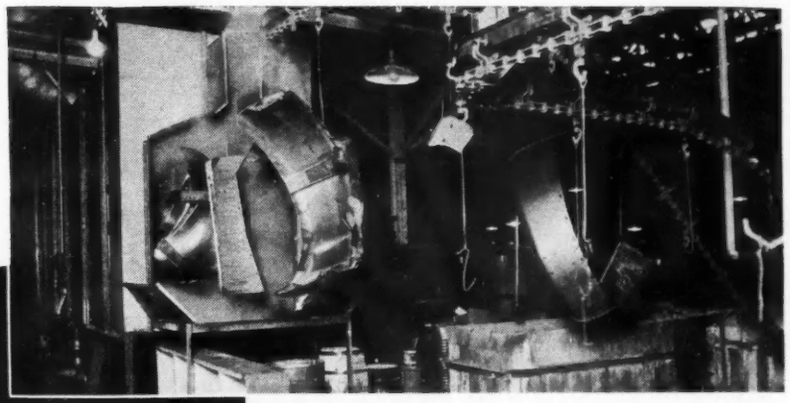
Among the new items of equipment in the gallery are a huge Cincinnati press brake; and a new Cincinnati shear with electric holddowns, having a shearing capacity of ¼ in. mild steel.

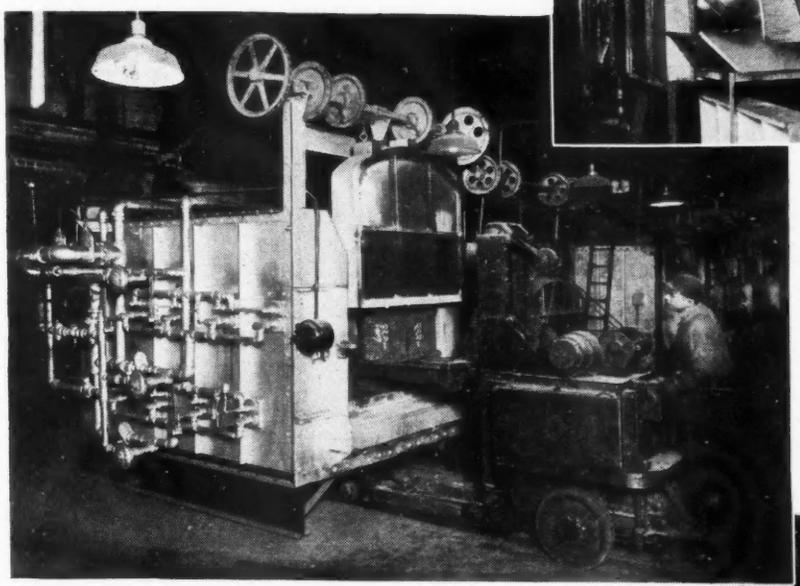
A number of the new Hanna riveters are used in riveting the various joints. These new machines promote worker comfort on operations of this kind by eliminating the usual noise and clatter of riveting hammers.

On the main floor will be found the various assembly framing bucks for the deck panels, body side panels, framing sections, etc. A master framing buck is used for the final assembly of the shell which includes the side and roof framing and the side and roof panel sections. When the shell assembly has

been completed, it is hoisted onto the overhead assembly conveyor for assembling the underbody and all running gear units.

An interesting feature of the all-aluminum structure is the fact that all parts of the structure are given a prime coat before any assembly operations are performed. The prime coat is sprayed on in a new Hydro-Filter Mahon spray booth of latest construction familiar in many automobile plants. This coat is baked in an adjoining oven. In turn, the various sub-assemblies are sprayed and prime-baked before final assembly.



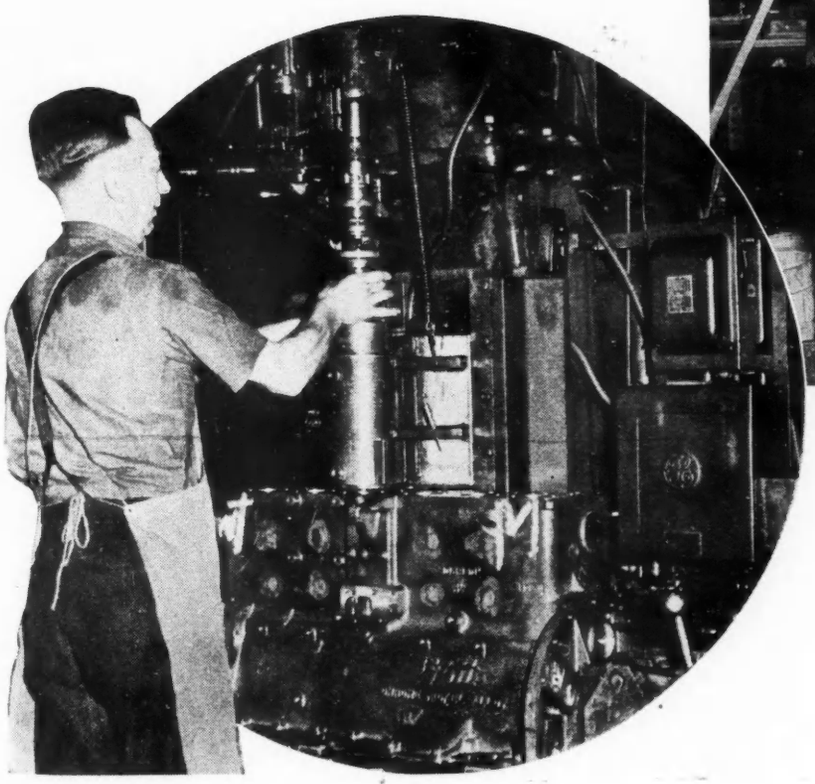


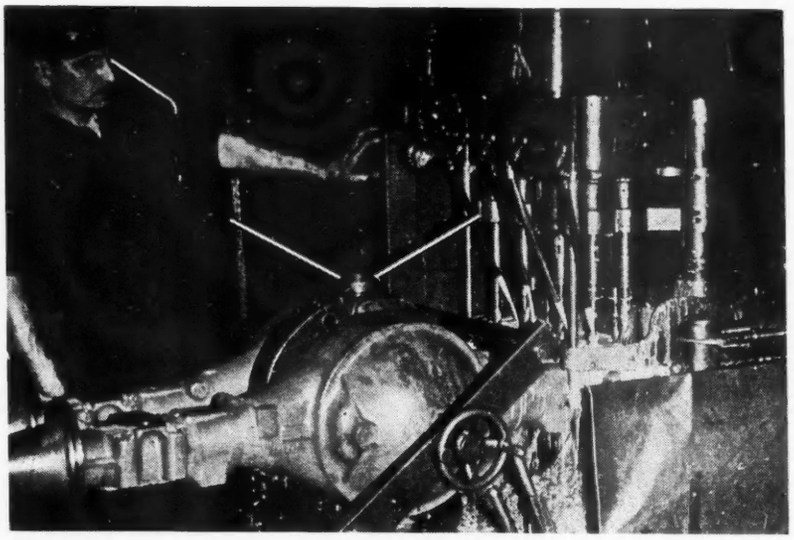
(Above) Mahon washer and dry-off oven installation for sheet metal finish preparation

(Below) New Cincinnati duplex Hydro-Broach tooled for completely finishing main bearing caps. Tooling and fixtures have sufficient flexibility to handle 14 different types of caps

(Above) View in heat-treating department with its battery of Hevi-Duty electric furnaces and gas-fired furnaces. Note the heavy-duty electric lift truck used for feeding the charge into furnaces

(Circle) White cylinders are double-honed. Rough-honing on single spindle Barnes machine fitted with Micromatic hones is shown here



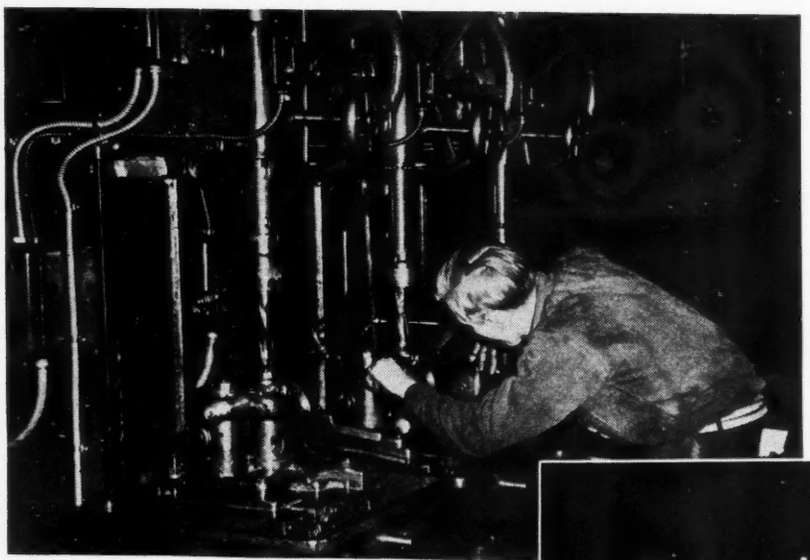


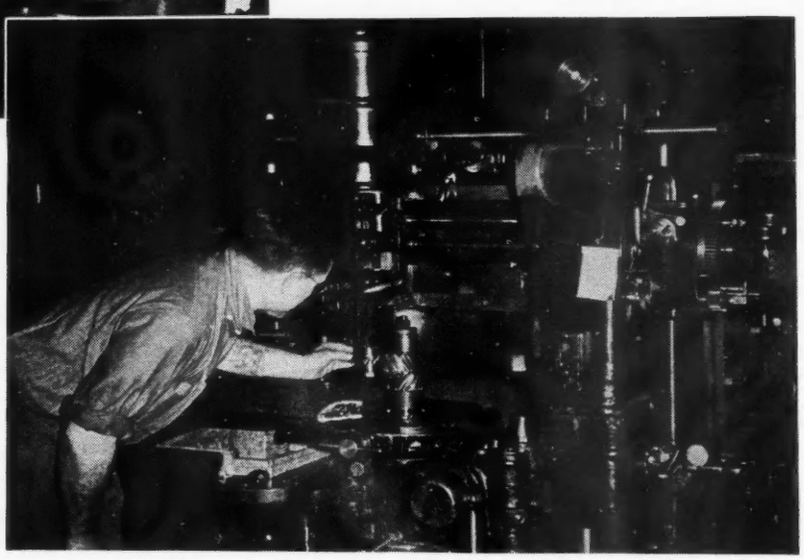
Unique axle drilling machine has been developed by fitting a heavy-duty Minster drill press with a vertical multiple spindle drilling attachment. Axle end drilling is accomplished by means of a horizontal Natco drilling unit, at the right, self-contained and automatic in operation

As the completed buses come off the final assembly line they are given a final prime coat in a special paint shop equipped with two spray rooms and two baking ovens, each one sufficiently large to handle an entire bus.

Before leaving this department, we should like to note the set-up of Mahon equipment for the heat treating, cleaning, and painting of the formed aluminum sheets. The heat treating oven is 16 ft. in length and 12 ft. wide, heated with a Surface Combustion direct gas-fired heater. The oven is fully protected by automatic controls—a Minneapolis-Honeywell control for safety; and Brown instruments for temperature control. The heat treating cycle takes about 12 hours and the temperature during that interval must be maintained within 2 degrees. To effect this control, they have installed a Brown air-operated temperature controller together with a recording potentiometer with five sets of thermocouple leads so that temperature records may be taken at five different points in the load.

After heat-treatment the aluminum sheets go through a three-stage washing machine combining an alkali wash, a cold water rinse, and a hot acid rinse. In this cycle the work is held for 1½ minutes in the alkali tank, ¾ minute in the cold water rinse, and ¾ minute in dilute phosphoric acid rinse. Tanks requiring heat are heated with Maxon-Premix gas heaters through a large steel tube. As the work emerges from the phosphoric acid rinse, it is dried by a hot-air blast which is a redirected exhaust from the tank gas heaters. This blast is given the proper velocity by means of a suitable booster fan. The sheets now are ready for the prime coat in the spray booth as mentioned earlier.



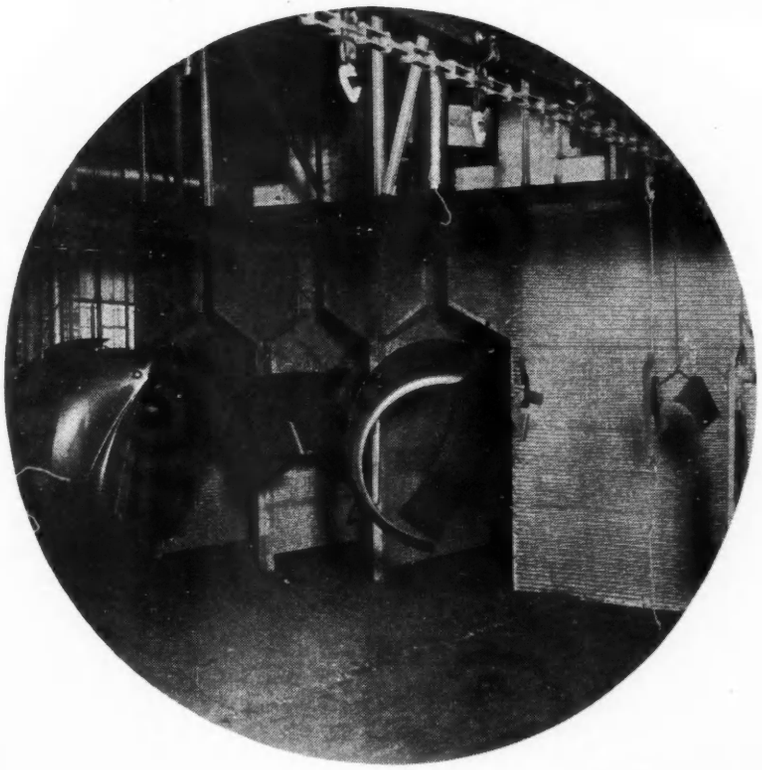


(Above) Among the Baker drills used here is this new three-head drilling set-up for drilling and reaming the tapered holes in steering knuckles

(Right) One of a large battery of the familiar Fellows gear shapers

Final assembly of the new coaches takes place while the body is suspended from the heavy-duty rails overhead

(Circle) Fender and sheet metal conveyor lines carry the painted parts through the new baking ovens

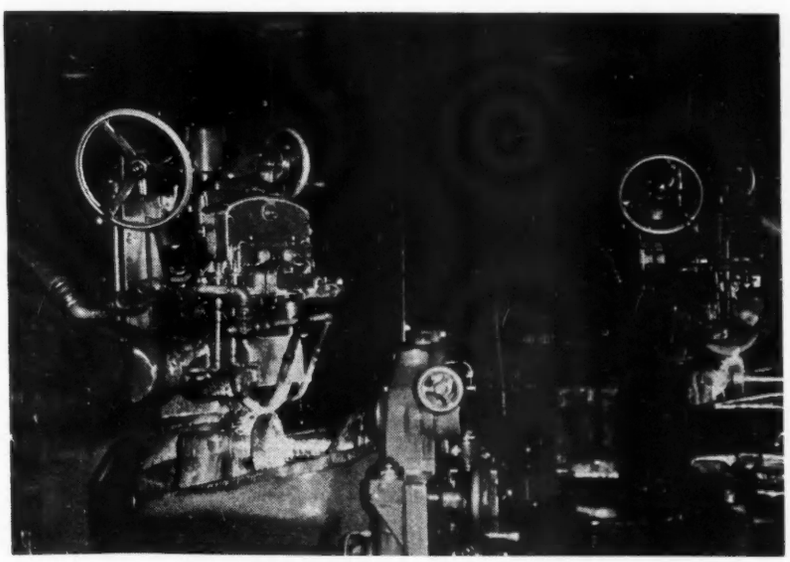


supplies it with the principal running gear units by an arrangement in which the final assembly of major units such as the engine and rear axle is handled in the basement gallery directly under the final assembly lines. Such unit assembly lines are located directly under the point of usage on the truck lines above, the assemblies being hoisted up to the line through conveniently located openings in the floor.

The mass production line in chassis building No. 1 is traversed by a long overhead feeder monorail that carries tires, steering gear, and other parts.

Sheet metal preparation and as-

Battery of three Pratt & Whitney precision gear grinding machines is a recent acquisition. These machines are used for finishing a variety of gears including timing gears, oil pump gears, and 3rd and 4th speed transmission gears



Truck Division

The truck division is a completely centralized department concerned with the delivery of complete trucks. Its activities comprise essentially the frame assembly, chassis assembly and final assembly. From the frame assembly, the frames are routed to one of two assembly buildings—chassis assembly line No. 1 for light mass-production models; and chassis assembly line No. 2 for heavy-duty models, cab-over-engine jobs and specials.

The truck division is closely knit with the unit-parts division which

sembly have been organized in two stages corresponding to the function of the assembly line. Thus the first section of the assembly line has a chassis spray booth built right into the line for painting the frame and running gear, using a rapid air-drying synthetic enamel. On the same side of the department are located the paint facilities for the sheet metal parts assembled to the frame. As the sheet metal comes in on the monorail, it is first chemically cleaned and dried in a special Mahon drier. Then the parts continue on the same monorail through the spray booths and the baking ovens. All sheet metal parts are finished in a synthetic baking enamel.

On the other side of the assem-

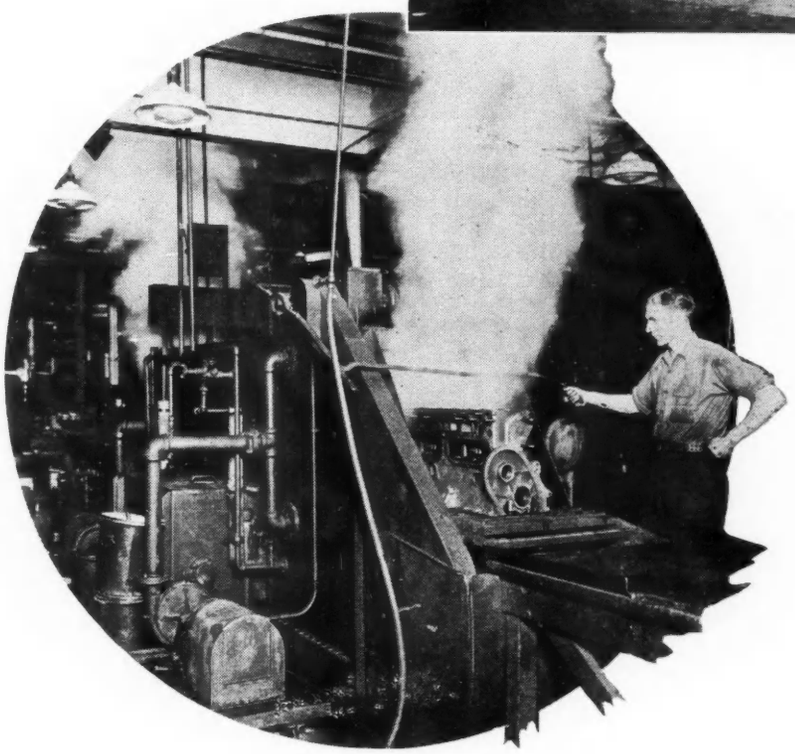
Engine Cylinder and Crankcase Assembly

OPERATION	EQUIPMENT
Spray valve passages, valve spring chambers and interior with red engine enamel	Spray booth
Rough and finish mill top of cylinder and bottom crankcase faces, rough and finish mill bearing faces and bearing dowel, mill manifold and rest pad	Ingersoll milling mach.
Drill and ream dowel holes for locating	24 in. Cincinnati drill press
Rough and finish mill ends and water line cover pad	Ingersoll milling machine
Rough and finish mill main bearing dowels	Newton hydraulic milling machine
Mill water line cover pad	Milwaukee Mill — 4B (Kearney & Trecker)
Mill lifter bracket bosses	Cincinnati mill No. 3
Mill water pump and distributor pads	Cincinnati mill No. 3
Mill valve cover faces	Heavy plain Milwaukee mill (Kearney & Trecker)
Mill gas pump oil filler pads	Millwaukee Mill (Kearney & Trecker)
Drill holes in top and bottom	Two-way Fox multiple spindle drilling machine
Drill holes in ends	Two-way Fox Multiple spindle drilling machine
Drill main line oil hole	Special horizontal drill press
Rough bore cylinder bores	Putnam multi-boring machine
Drill valve stem guide holes	Putnam Multi-drilling machine
Rough ream valve guide holes, size valve parts, rough counterbore for exhaust valve, and chamfer for intake valves	Putnam multi-drilling machine
Drill water circulating holes	Foote-Burt multi-drill press
Semi-finish bore cylinder bores	Putnam multi-boring machine
Finish ream valve guide holes and size counterbore for valve seats	Putnam multi-drilling machine
Chamfer cylinder bores.	24 in. Cincinnati drill
Spotface valve guide holes	Moline drill press
Mill main bearing faces to length and mill bearing anchor slots	Newton hydraulic mill—rise and fall
Drill 59 miscellaneous holes. Ream valve guide bushing holes	Two-way Baush hydraulic multiple-spindle drilling machine
Drill, ream and spotface oil gage hole	Cincinnati drill press
Drill 4 oil holes through to bearings, drill, countersink and tap 2 oil pump holes, drill, countersink and tap distributor clamp hole	Cincinnati radial drill press
Counterbore and ream valve stem holes, drill and tap oil hole	Cincinnati radial drill press
Finish ream and face exhaust seats	Conveyor
Drive in valve inserts	Conveyor
Drill and tap oil hole in camshaft bearing, drill oil pressure and oil by-pass hole in bottom	Cincinnati drill press

OPERATION	EQUIPMENT
Press in valve guide bushings and broach	General flexible power press 15 ton
Check and inspect valve guide bushings	
Counterbore main bearing stud holes, countersink holes for top studs, countersink pan bolt holes	Hammond radial drill press
Countersink all holes both sides, tap bearing stud holes and tap holes on both sides of case	Baush 3-way multiple tapping machine
Assemble and drive main bearing studs, break sharp edges	Black & Decker hi-cycle stud driver
Pull down studs and fit caps	Conveyor
Assemble washers and nuts to caps, stamp caps and case, rough bore cam and crankshaft bearings	Remodeled engine lathe
Semi-finish bore bearings and cam bores	Rockford hydraulic boring machine
Semi-finish bore bearings and finish bore cam bores	Barnes hydraulic boring machine
Drill angular hole	Plain drill press
Ream pin hole for thrust washer	Conveyor
Assemble bushings in camshaft bearings	Oilgear horizontal press
Assemble thrust collar	Conveyor
Mill slot in end	Cincinnati drill with mill attachments
Bore generator support lugs	Rockford horizontal boring machine
Diamond bore main and cam bearings with caps assembled	Special diamond boring machine
Bore oil pump hole, bore and ream distributor hole (hand ream)	Triway Ingersoll boring machine
Drill and tap 2 oil tube bracket holes, 2 generator shaft holes, 1 Welch plug hole in each end	Cincinnati radial drill press
Countersink and tap manifold holes and holes on other side	Hammond radial drill press
Redrill, counterbore tap and seat pop-off hole	Cincinnati radial drill press
Tap all holes in ends and top	3-way Baush multiple spindle tapping machine
Bore oil slinger in end bearing	Drill press with bore attachment
Finish mill top and clean out long water hole	Cincinnati vertical mill
Rough grind exhaust valve seats	Hall valve seat grinder
Finish grind exhaust valve seats	Hall valve seat grinder
Drive various studs and Welch plugs	Radial drill press
Chamfer intake valve seats	Conveyor
Diamond bore cylinder bores	3-spindle Baush indexing boring machine
Rough hone 6 bores	Barnes single spindle hone
Finish hone 6 bores	Moline multiple honing machine
Face center main bearings	
Test for oil leaks	Conveyor
Water test	Special fixture
Wash	Blakeslee continuous washing machine
Spray oil	Conveyor

Final inspection is a serious business at White. Here is a corner of the new inspection building through which every vehicle must pass before shipment to the buyer

(Circle) Every cylinder block gets a thorough bath in this Blakeslee washing machine before going to the assembly line



bly department, paralleling the final assembly line, are the spray booths and ovens for the cabs and finish sheet metal parts such as hoods and radiator shells.

Final inspection of the finished product from both the high-production and special assembly lines is a serious business at White. It is truly a consumer inspection with the inspectors assuming the critical eye of the buyer. To provide adequate facilities for the purpose, the company has an entire building set aside for the final inspection. Here will be found all the necessary equipment and instrumentation for making a complete check-up of the vehicle. All vehicles are tested on the chassis rolls and all have to pass the exacting road test.

Serving the chassis division is the press shop which has complete facilities for producing the various sheet metal details used in the truck line. Among other things this department makes all of the gas tanks used in current production. An interesting item of new equipment is a Federal spot welding machine which takes care of most of the miscellaneous welding. It is fitted with the most modern details including water-cooled welding electrodes and an electric timing device.

Another department coming under the jurisdiction of the chassis division is the frame fitting department. It is located, for convenience, in the unit-parts machine shop building but functions independently.

Unit Parts Division

This division is an independent organization serving both the coach and truck divisions as a purveyor. Among the major activities in this plant are the following:

Engine production, assembly, and testing.
Axle production and assembly.
Transmission production and assembly.
Screw machine department.
Non-current parts manufacture.
Central heat-treating department.

The transmission department is relatively unchanged within the present set-up. Generally speaking, in addition to the function of building transmissions, this department serves as a central gear department and produces all gears required for other departments. Most of the gear cutting is done in the customary fashion on a large battery of familiar Fellows gear shapers. Bevel and spiral bevel gears for axles are produced on Gleason gear shapers.

A fairly recent development is the installation of a battery of three Pratt & Whitney gear grinders which is kept busy on the finishing of a variety of gears including timing gears, oil pump gears, and the 3rd and 4th speed transmission gears.

As the final operation before assembly, all gear sets are matched and lapped in a separate department to assure well-matched and quiet gear trains. Complete transmissions then are tested 100 per cent in a special sound room fitted with transmission dynamometers.

As mentioned earlier, all final assembly operations for the unit-parts division are handled in a basement gallery directly under the points of usage for the truck chassis assembly lines overhead. The only exception to this is found in the transmission department where it is more convenient to locate the

(Turn to page 643, please)

Caterpillar Offers Another Diesel Powered Tractor

CATERPILLAR TRACTOR CO., Peoria, Ill., has added a new model to its line of Diesel-equipped chain-track tractors. It is known as the D2 tractor and is equipped with a four-cylinder engine of 3¾ in. bore by 5 in. stroke, which makes the piston displacement 221 cu. in. The full-load governed speed is 1525 r.p.m. and the ratings are 31.5 belt hp. and 25.5 drawbar hp. There are five speeds in the transmission, and the maximum drawbar pulls in the various gears at sea level and rated engine speed are 5690, 3740, 3025, 2325 and 1490 lb., respectively. When the engine is slowed down below governed speed by overload, it develops considerably more torque at the flywheel, and from the foregoing maximum drawbar pulls at governed speed, the following maximum drawbar pulls at reduced speeds have been arrived at by calculation: 6160, 4050, 3280, 2520 and 1615 lb.

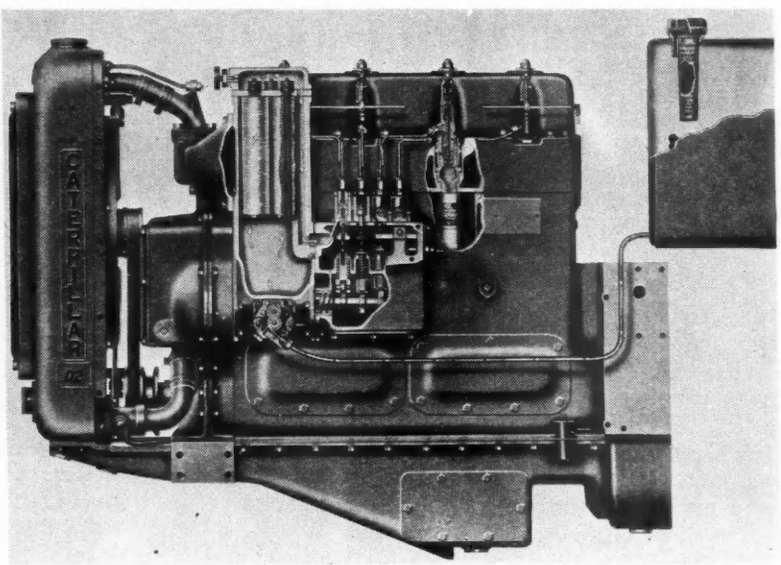
At the governed speed of the engine the five forward tractor speeds are 1.7, 2.5, 3.0, 3.6 and 5.1 m.p.h., while the reverse speed is 2.1 m.p.h.

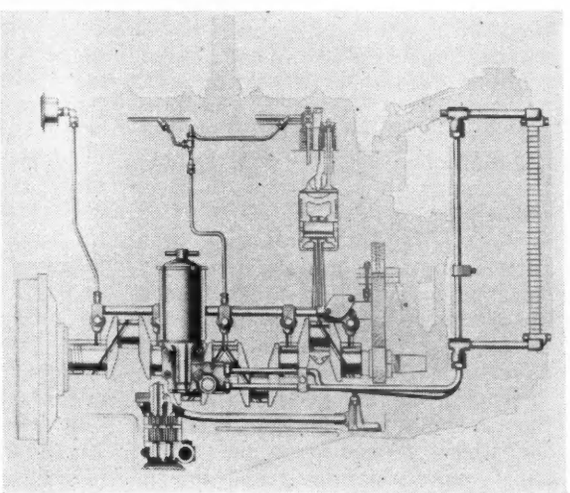
The crankshaft is of 2¾ in. diameter at the main bearings, of which latter there are five, with an aggregate bearing area of 80.3 sq. in. Starting of the tractor engine is effected by means of an independent, two-cylinder, horizontal-opposed gasoline engine of 2¾ in. bore by 3 in. stroke, which develops 10 hp. at 3000 r.p.m. and drives through a multiple disk clutch and helical gears to the flywheel. The starting engine is equipped with a downdraft carburetor, a high-tension magneto, and a fly-ball governor.

Each of the tracks has a length of ground contact of 54½ in., and with 10-in. track shoes the total ground contact area is 1090 sq. in. The height of the drawbar, measured from the lower face of the standard track shoe, is 11 15/16 in. The drawbar has a free lateral movement—measured at the pin—of 20⅜ in. Steering is effected by means of two friction clutches, of which each has 16 friction surfaces, the total frictional area of each clutch being 564 sq. in.

The capacity of the cooling system is 7¾ gals., that of the crankcase, 12 qts. The shipping weight is approximately 6400 lb. with a gage of 40 in. and 6525 lb. with a gage of 50 in. The fuel tank has a capacity of 18 gals.

The two photographs reproduced herewith show details of the engine and a diagram of the pressure lubrication system.





Sectioned view of Caterpillar D2 Diesel tractor engine and the pressure lubricating system, showing oil filter and oil cooler

Just Among Ourselves

A Little Bit About Not Much

AT the National Automobile Dealers Association Convention in Detroit last week, a featured speaker was Representative Gardner R. Withrow, sponsor of the Congressional resolution authorizing an investigation of the industry by the Federal Trade Commission. The text of Mr. Withrow's remarks virtually duplicated an earlier speech by him over a national radio hookup, from which we printed some excerpts in last week's issue of AUTOMOTIVE INDUSTRIES.

At the end of his set speech to the N.A.D.A. members, Mr. Withrow departed from the earlier text to launch an attack on certain newspapers, a portion of the automobile trade press, and this publication and its editor specifically.

Referring to an editorial written by the undersigned and printed in our issue of June 5 last, in which it was remarked that "Mr. Withrow would spend $75,000 to prove his point" about the alleged need for an investigation of factory-dealer relations, the Congressman said, in Detroit:

". . . The resolution never called for $75,000 and if Mr. Hosking would have taken his information from the interview I gave to one of his agents when he came into my office he would have known it called for $50,000 and not $75,000. In fact, I believe I armed him with a copy of the resolution when he left the office, but it just goes to show that here is an editorial that is read by thousands upon thousands of people in the trade and is not in keeping with the facts, even the most casual facts."

It happens that Mr. Withrow's own facts concerning this incident are rather shaky. Written prior to June 5, the editorial to which he refers was based on an official copy of the Withrow Resolution—H. J. Res. 351—in which it is plainly printed "The sum of $75,000 is hereby appropriated to the Federal Trade Commission to carry out the purposes and directions of this resolution."

The interviews with various representatives of AUTOMOTIVE INDUSTRIES during which, as Mr. Withrow correctly states, he modified his position, occurred a good many weeks after the writing of the editorial about which he complains. so that the information they disclosed could hardly have been included in the earlier editorial, which was based on the known facts of the time as printed in the official record.

We are inclined to beg your pardon for a protracted discussion of what is essentially a rather trivial matter. But Mr. Withrow's charges were made to an audience of more than a thousand, and although they were later stricken from the official proceedings of the N.A.D.A. by action of the Board of Directors, their verbal damage had already been done.

Another Move Toward Centralization

THE tendency among automobile dealers to relinquish hard-won rights and privileges in favor of legislative control of their affairs is once more exemplified in a Pennsylvania study seeking the views of dealers and repair shops on the question of the States setting up official inspection stations.

The Pennsylvania Automotive Association has issued a questionnaire on the subject which says "The question of State owned and operated safety inspection stations has been raised by certain P.A.A. members of long standing. Many automotive merchants are dissatisfied with the practices indulged in by many official inspection stations under the present motor vehicle equipment inspection law."

Under the present law in Pennsylvania, about 8000 dealerships and repair shops are licensed by the Secretary of Revenue to make the required semi-annual safety inspections of all motor vehicles in the State. The inspection charge is 50 cents, out of which 5 cents reverts to the State for the official sticker to be affixed to the inspected vehicle.

The administration and practice under the existing law has caused a great deal of dissatisfaction to everyone concerned, but, according to the Department of Revenue records, it has improved the mechanical condition of cars on the road in the State.

If the inspecting function is assumed directly by the State, it will mean an increase in the motor vehicle tax burden, hidden or otherwise. For this reason, and because it will add another layer to the growing pyramid of State bureaucracy, we are opposed to the idea of any large State taking on the business of inspecting motor vehicles.

HERBERT HOSKING.

Part Two

concluding Part One which appeared in the April 30, 1938, issue of AUTOMOTIVE INDUSTRIES.

Industry's No. 1 Job—Public Relations

By PAUL W. GARRETT*

THE challenge that faces us is to shake off our lethargy and through public relations make the American plan of industry stick. For unless the contributions of the system are explained to consumers in terms of their own interest, the system itself will not stand against the storm of fallacies that rides the air in this era of easy, world-wide and instantaneous communication.

I refer to such fallacies as the one that sets up class hatreds by declaring that industry is a device operating for the unholy benefit of a few economic royalists. For this injures not particularly the economic royalists but industry itself and all those who live by industry—especially the thousands upon thousands of small enterprises. Repressive measures always hit them hardest. It ignores the fact that the American system of enterprise more than any other prevented the growth of classes by enabling each generation to replenish from the ranks the leadership at the top. Has it not provided the means for a wider distribution of wealth, of comforts, of the benefits of civilized living, than has been attained by all the planned economies of the past ten thousand years?

And does not this fallacy ignore the fact that 84 cents out of every dollar of manufacturing income goes to the employe, whereas the remaining 16 cents is divided up between the inventor, investor and all the rest who keep the industrial machine going? Does it not ignore the fact that in our profit and loss system corporate earnings over a period average barely more than bank interest on the capital employed?

I refer to the fallacy that business went on a "sit-down" strike to bring on this depression to embarrass the New Deal and to embarrass labor. That somehow or other business has secured the magic key by which prosperity can be turned on and off as from a spigot. This makes a very exciting story. It is probably the most flattering left-handed tribute paid to business in many a day. But does it not ignore the cold, prosaic fact that industrial production and business volumes depend not upon the capital under control of managements but upon the capital in the pockets of potential customers? Is it not the customer who says how many days a week the factory is going to run? Is it not the customer who says whether a new plant addition is going to be built? One thing is sure. Nobody in Government or in industry, or anywhere, yet possesses the power or the knowledge to control the swings in the economic cyle.

I refer to the fallacy that the way to create buying power is to level down from the top. That the way to spread wealth is to divide it, not multiply it. It is a shameful commentary upon our neglect of elementary business interpretation that such a doctrine, based upon the outworn philosophies of Karl Marx and the Socialist school, should ever have gained a foothold in these United States. For does this theory not ignore the fundamental fact that production of goods precedes distribution of goods—that increase in wealth can only come through producing ever more and more things to distribute?

I refer to the fallacy that the machine is driving men into idleness. Does this theory not ignore the fact that jobs for workers increase almost in direct proportion as workers can call upon horsepower to help

If there is any secret in building good public relations, it is to begin at home and work from the inside out. Begin in the plant to be well thought of in the plant community. Begin in the plant community to be well thought of over the nation.

* Presented by the Director of Public Relations, General Motors Corp., at the Annual Convention of the American Association of Advertising Agencies.

them? Does it not ignore the fact that during the last 50 years of machine development the population of the nation has doubled but the number of wage earners in factories trebled? Does it not ignore the fact that for every person given a job in manufacturing enterprise four others automatically were given jobs as suppliers and in corollary services thereby created? Does it not overlook industry's use of the machine to build automobiles by which jobs were eventually provided for 6,000,000—jobs that would never have been created under handcraft methods—as against 60,000 jobs furnished through buggy building in its heyday? Does it not ignore the fact that industry must be dynamic, ever-progressing, ready to capitalize upon technology in order to force costs lower and lower! That it must make ever more and ever better goods if a higher standard of living is to be created for all and if people are to be enabled to partake of the spiritual and cultural values of civilization?

Should we permit fragmentary and hand-picked testimony in regard to the machine to circulate as factual findings? Should we confess that our present stage of progress in the production of goods represents the peak, and that we are willing, through the misguided imposition of artificial restraints, to sink back to the level of the handcraft age?

I refer to the fallacy into which so many workers have been led that the salary of the boss comes out of their pockets—that management is overpaid at the expense of the workers. Does that theory not ignore the fact that the industrial worker himself is the principal beneficiary of the increased living standard resulting from industrialization; that management, without which there would not be industry, costs but a few cents a week for each worker? Does it not miss the very purpose of management in the industrial scheme of things and the fact that, in relation to accomplishments in producing jobs and goods, American business management is the least expensive in all the world? Is anything more costly than a failure in management? Is anything more expensive, to worker and to consumer alike, than inefficient management?

Finally, I refer to the fallacy of fallacies—the strange belief that bigness in industry somehow is synonymous with badness, as if size had anything to do with morality. Here is a delusion which strikes at the root of our economic system. For, by and large, are not the benefits that distinguish us from other nations, the things that visitors from abroad would like most to copy, precisely those things made possible by our America system of large-scale production? Does not such a theory overlook the fact that through the pattern of bigness you can purchase for $700 a car that would cost $15,000 built like a house on the pattern of smallness? Does it not ignore the fact that the consumer and nobody else determines that industry sometimes must be small and sometimes big to serve him well—big, as for instance, when buyers want deep, stylish fenders on their cars, which must be formed on drawing presses costing $80,000 each? Does it not ignore the fact that big business, instead of crushing smallness, is, through creating new demands for supplies, services and related activities, the most prolific breeder of small businesses so far known? Are not big business men and little business men after all about the same fellows beneath the skin? On fundamentals they think and act pretty much alike. Did not the recent Wash-

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ington conference indicate that small business is nothing more than big business in embryo—than smallness on its way to bigness? Does not this prime fallacy condemn the small business to permanent stagnation?

The point I wish to make is that it takes all manner of businesses—big and little—to make an industrial world. And neither large enterprises nor small will be able to capitalize their resources to the full in the interests of the consuming public unless like water they find their own levels.

Now it is little comfort that these theories, notions, contentions, and beliefs have no basis in fact and that people ought to know better. Public relations must start not with what people ought to think but with what they actually do think. An opinion deeply rooted in consumer consciousness is just as much of a fact, so far as public relations is concerned, and just as important a fact to be dealt with, as a scientific finding from a research laboratory. And we must treat these psychological findings with all the respect we would treat any other finding. We must move up to them not in temper but objectively.

These fallacies present to industry an honest challenge through public relations to interpret for consumer guidance the principles and facts underlying industrial existence just as it would, if challenged, seek remedies through legal, engineering and merchandising channels in technical fields. If American industry, by constantly placing within the consumer's reach a better way of living, has helped to give the world the best life in recorded history, and created the greatest nation of consumers known to mankind, why should it hesitate to tell the story? Why should we not recognize the responsibility to clarify untruths which, if allowed to grow, would destroy for the consumer the benefits that are his?

Considering the stake, it is difficult to understand why industry has allowed itself to be crowded through the smear techniques of the opposition into apologies for efforts to develop good relationships with consumers. Nor is it easy to understand why we have sometimes been frightened into the notion that if we move at all we must move with subterfuge, in secrecy, with doubt of our approach—nor why we should not discuss openly and frankly everything we do in a desire to create good relations with the public.

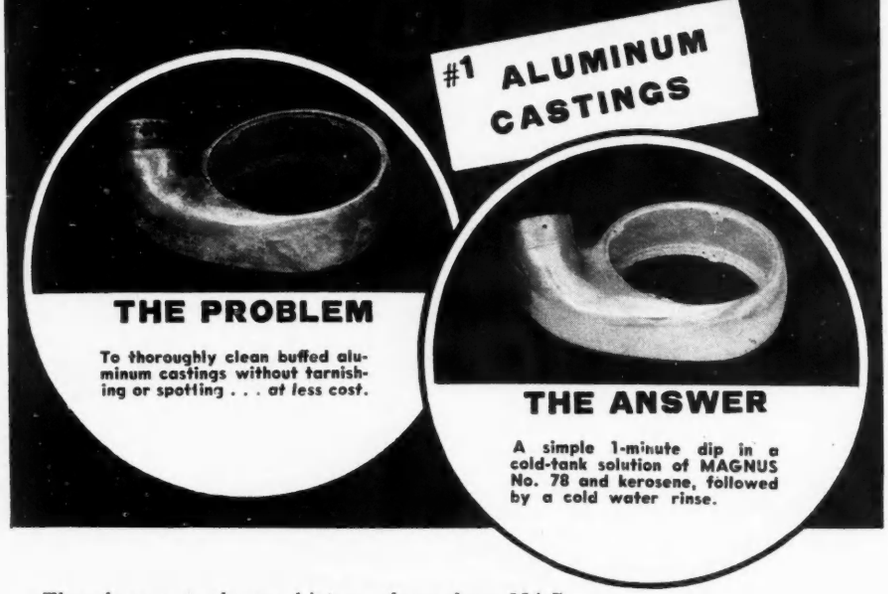
Now how is industry in its collective sense going about this job? What the public thinks of industry is the sum total of what it thinks of the individual parts. So the correction of past misconceptions and the foundation for future good concepts must boil up from the work of individual companies.

There is in the Book of Nehemiah the story of the fall of the Wall of Jerusalem and how all those who lived there builded for their mutual protection a new stronghold of their own closely adjoined houses. Strength of the whole comes from a unification of the individual members.

What is there that each individual company in its own way and sphere can do to possess the regard of people—do for itself as an institution and, as an inevitable by-product, for the system?

The most obvious lesson any company can learn and seemingly the most difficult is that good outside relations grow from good inside relations. If there is any secret to success in building good public relations it is that you must begin at home and work from the inside out. Begin in the plant if you want to be well

INTERESTING CLEANING DISCOVERIES THAT LED TO IMPORTANT PRODUCTION SAVINGS


#1 ALUMINUM CASTINGS
THE PROBLEM
To thoroughly clean buffed aluminum castings without tarnishing or spotting . . . at less cost.
THE ANSWER
A simple 1-minute dip in a cold-tank solution of MAGNUS No. 78 and kerosene, followed by a cold water rinse.

The above actual case history shows how MAGNUS EMULSION DEGREASING SOLVENT No. 78 enabled a large Eastern manufacturer of electrical appliances to completely eliminate hand scrubbing from cleaning buffed aluminum castings. Previous to using MAGNUS No. 78, more labor was required on that one time-wasting, profit-eating item than on any associated operation in the production line. MAGNUS No. 78, used *cold, completely eliminated* that expensive item and, in addition, showed other important savings.

HAND SCRUBBING ELIMINATED

Let us show you how MAGNUS EMULSION DEGREASING SOLVENT No. 78 will cut your cleaning costs, give you brighter, better-cleaned castings . . . and otherwise materially increase your profits. Write today for a MAGNUS SERVICE MAN to give you a demonstration *under your own working conditions.* Or, send us the details of your cleaning operations for our specific recommendations.

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Magnus CLEANERS

thought of in the plant community. Begin in the plant community if you want to be well thought of over the nation.

First: A company's public relations program, to get anywhere, must begin in the outer office and inside the plant. If the immediate family is not happy and informed, those whom it meets on the outside will not be. To outsiders those who work for a company are the company—outsiders judge the company by the folks in the company they know. But good relations with employes depend upon something more than high wages. The pay of course should be right always, but to most every employe a sense that he is being treated fairly is just as important as that he is being paid well. Lack of attention to grievances, real or fancied inequalities in treatment, failure to explain the whys and wherefores of company policies—these are the things that underlie most troubles.

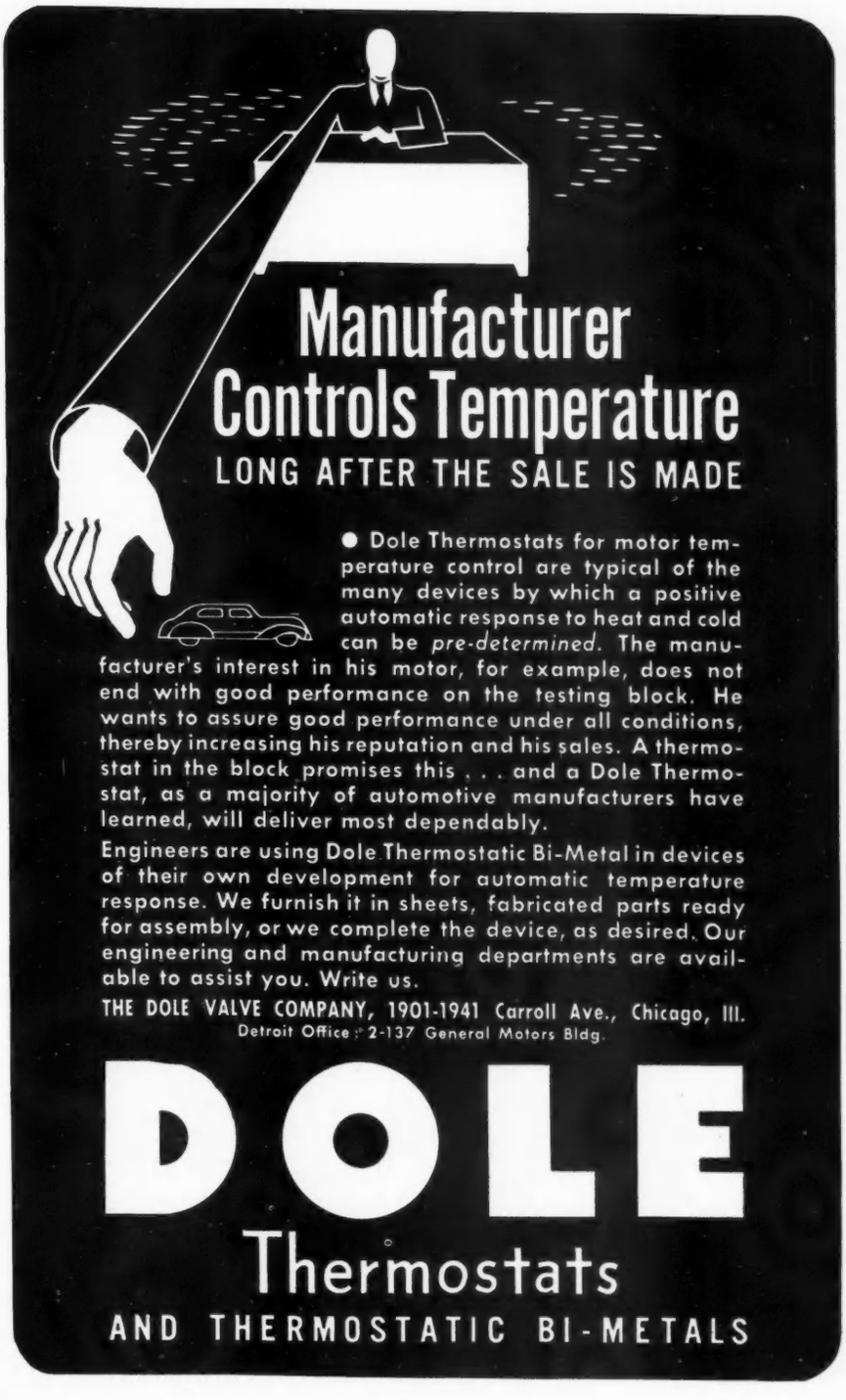
Happy is that organization where by deed every employe is made familiar with the principles and the philosophy upon which the business is run. Happier still is the organization where words as well as deeds on the part of management form the basis for understanding — understanding with the employe in overalls, and with the employe in a "white collar" who has been all but forgotten for lo these many years. How the employment office hires, what the foreman does, how the paymaster pays, and how management conducts and articulates itself—these are the A B C prerequisites to building harmony within the family.

One of the difficulties is that business sometimes fails to anticipate the natural barriers that grow up between the men at the top and the men at the bottom as growth takes place. We suspect those we do not know. You are all familiar with that story of Charles Lamb, who said: "I dislike that man." "But," came the reply, "you do not know him." "Of course," was Lamb's answer, "I do not know him. If I did, I couldn't dislike him."

It is not always easy to transmit the philosophy of the president to the foreman. It is not always easy to transmit the philosophy of the foreman to the top management. But unless two-way channels of communication are cleared from top to bottom and from bottom to top, the industrial machine weakens and one day bogs down.

The small merchant employing four or five people has no difficulty in maintaining an understanding between himself and his employes. They know his problems. They are willing to cooperate when business falls off. They can see he is trying to pull through as best he can. As the business expands it becomes harder for them to see that—unless the small merchant, now grown big, sets about deliberately to project the philosophy that his men just naturally picked up when he was small. When the manager becomes a step removed from his men the business tends to get into abstractions. The bosses become "management." The employes become "labor." And then, instead of a fellow who hires some one to work for him, we have "capital and labor"—and the stage is all set for a series of misunderstandings.

Second: A company's public relations is strongly rooted in its plant community relations. There is no place a company is so much liked or hated as where it lives. Employes and townsmen observe what goes on, exchange views. No company can get away from the opinion folks hold


Manufacturer
Controls Temperature
LONG AFTER THE SALE IS MADE
● Dole Thermostats for motor temperature control are typical of the many devices by which a positive automatic response to heat and cold can be *pre-determined*. The manufacturer's interest in his motor, for example, does not end with good performance on the testing block. He wants to assure good performance under all conditions, thereby increasing his reputation and his sales. A thermostat in the block promises this . . . and a Dole Thermostat, as a majority of automotive manufacturers have learned, will deliver most dependably.
Engineers are using Dole Thermostatic Bi-Metal in devices of their own development for automatic temperature response. We furnish it in sheets, fabricated parts ready for assembly, or we complete the device, as desired. Our engineering and manufacturing departments are available to assist you. Write us.
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Thermostats
AND THERMOSTATIC BI-METALS

in its home town.

Good community relations grow largely from the attitude of employes. As citizens of the community in which the company has its being, they are the best spokesmen for its policies. But beyond this, industry as a partaker of community benefits must consciously assume its share of responsibilities. Local management must make sure that it understands the community's wants and needs, and that in turn the community is made to understand what industry proposes to do and how.

For the interests of industry and of the community are mutual and supplementary; industry contributes the economic atmosphere—the community determines the moral, the cultural and the civic atmosphere in which employes live. Unless industry has confidence in the community and the community has confidence in industry how can the interests of either be fully served?

Third: With good relations inside the plant, and good relations within the plant community, you have the base for good relations with the public outside. But you can never take those relations for granted. Living right is not enough. People must know you live right. We must know them. They must know us. Know our company. What we really want is good relations with many more people than would find out about us were we content to allow the deed to speak for itself without any aid in its wider projection.

The art of public relations is in the art of multiplication—that is, the art of multiplying endlessly the good impressions of a company. It involves the honest but skilful employment of all the known media but, most important of all, a development of new approaches and a more advanced technique in their use than any we have as yet learned. The multiplier in public relations to work effectively must be a 1950 model.

In conclusion let me say that none of these things are easy of accomplishment. But none of them are impossible of accomplishment. They will not even be very difficult, as events seem to be shaping now once industry sets about its public relations with the same serious effort that in eras gone by it set about its financing, engineering, its production problems.

They will not be nearly so difficult of accomplishment as time goes on if industry, mindful of its responsibilities in the social order, begins to stand "for" some things and not so often "against" things.

You and I and everybody working for industry must severally, and each in his own way, assign to himself this task. We must look upon public relations, not as something superimposed, but as the way a business is conducted. It is the philosophy of management in its endless struggle to give the consumer more for less.

What each individual company does and says will vary as each keeps to its sphere, but there is one theme that must thread its way through every pattern. One basic formula all must follow. I refer to the paramount need for labor everywhere to plan its course mindful that jobs and pay checks come, first and last and all the time, from customers. I refer to the paramount need for all businesses—big and small alike—to plan their course mindful that their existence is of the consumer, by the consumer and for the consumer. With such a conception of public relations we will not go far wrong, for essentially are we not all customers—all consumers?

There is no place for public rela-

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The series of lapping operations performed as a matter of course in the Strom plant give Strom Steel Balls a degree of surface smoothness and sphericity that has always been unequalled in any other regular grade of ball. Only through such unique lapping practice can extreme precision be obtained.

Physical soundness, correct hardness, size accuracy, and sphericity are guaranteed unconditionally in all Strom Balls.

Other types of balls—*stainless steel, monel, brass* and *bronze*—are also available in all standard sizes. Write for catalog and prices.

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The largest independent and exclusive Metal Ball Manufacturer

tions that connives or squirms or distorts facts. Public relations is honest. It is frank. It is open. But it is vigor. It gains strength by application. Use it honestly, but use it on deeds and thoughts to make them multiply—without fear, without apology, without reserve. For to the extent that industry through public relations fails to maintain its initiative, its courage, its freedom of movement, is not the whole structure of our society endangered?

To enshrine this philosophy of management by public relations as the basic concept of the business, to see that it pervades the organization from top to bottom, to interpret with honesty the practices and precepts of the business in terms of benefits to others—lest business lose for the world the right through sound and ceaseless progress to serve humanity—that, as I see it, is INDUSTRY'S NO. 1 JOB. That is PUBLIC RELATIONS.

White Plant Modernized in $2,000,000 Program

(Continued from page 635)

assembly line within the manufacturing department.

The central heat treating department is a comprehensive unit equipped with modern facilities. Here will be found a battery of Hevi-Duty electric furnaces, gas-fired furnaces, and other equipment required for the variety of heat treating operations. It is of interest to note that all heat treated parts are subjected to a 100 per cent inspection for hardness before leaving the department.

The axle department is one that has been generously modernized in many details. Although space does not permit a complete description of many of the interesting operations, we can cover a few of the high spots. Here, for example, is a big double-end Cincinnati milling machine used for machining the brake camshafts. It takes ten of the forgings at a time, in the fixture, and in one setting saws the ends and mills the cam face to size.

The familiar heavy-duty Baker drill with three individual heads is set up for drilling and reaming the tapered holes in steering knuckles. A Norton grinder is used for finishing the bearing diameters on the spindles.

A novel set-up for drilling axle pads and ends is found in a special machine consisting of a Minster vertical drill press fitted with a vertical multiple drilling attachment in combination with a Natco horizontal self-contained drilling head. This machine takes two axles at a time in one setting.

The present modernization program included the purchase of a sizable number of the massive Cincinnati-Bickford radial drills, some of which have been installed in the axle department.

Rear axles are assembled in the basement gallery. One of the basic operations is the fitting of axle and tubes into the housing. This is done in a horizontal hydraulic press of 40-ton capacity.

The engine department is a big establishment in its own right. To show a cross-section of activity we have reproduced elsewhere in the article factory routings covering the sequence of operations on a number of the major engine parts. So far as the word picture is concerned we shall content ourselves with a brief high-spotting of a few items of new equipment.

In a general way, the layout of the engine machine shops has been

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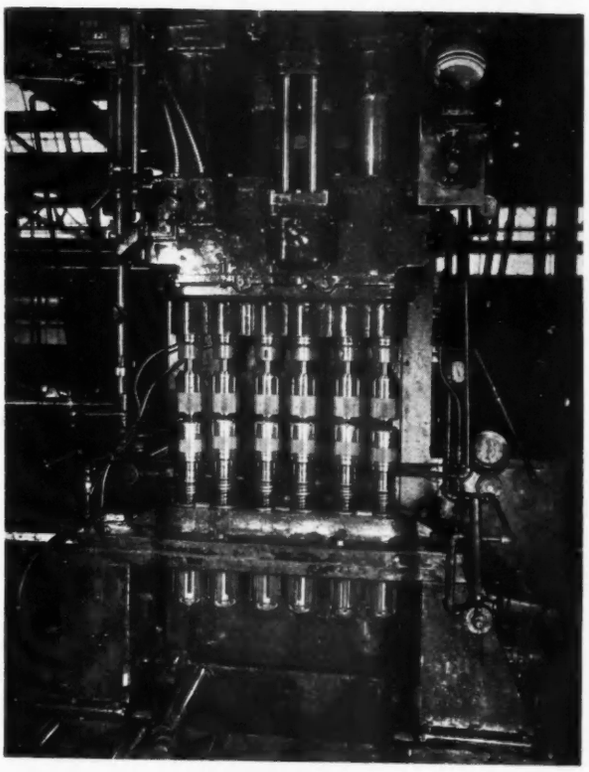
HYDRAULIC HONING TOOLS



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FOR CONTROLLED SURFACE FINISH

★ remove large amounts of stock ★ reduce processing costs
★ remove all deformed metal ★ produce increased accuracy
★ reduce processing operations ★ produce selective finish
★ simplify selective interchangeability

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developed for the most economical handling of the line of nine basic engine models. The twelve-cylinder underfloor coach engine is machined on a separate and unique line of special Ingersoll Power-Pack machines, described very completely in Automotive Industries when the first underfloor engine was introduced several years ago. It is an interesting commentary on the Ingersoll unit-type equipment that with but slight modifications in tooling, the same basic machines are being used to machine the current underfloor model.

Engine assembly is carried on in the basement gallery under the final assembly lines, utilizing five separate assembly lines to facilitate the most efficient handling of basic models and customers' options. The big engines are handled in large individual roll-over assembly fixtures with two men per engine. Each crew completes its own engine assembly. The underfloor engines are assembled on a special line.

The largest production model—the small six-cylinder engine—is assembled on a progressive high-production line served by an overhead power line for high cycle electric tools. As is customary, this line has numerous sub-assembly stations at right angles to the line at various points of unit installation.

All engines, regardless of size or type, are block-tested after assembly. Following the block test, the engines are routed to inspection tables where the pan is removed and bearings checked for wear. On the block test, White uses a special break-in oil exclusively. All engines then are tested on a dynamometer before being approved.

The sizable battery of electric dynamometers in this department profited from the present modernization program by the installation of two new machines. One of these is a General Electric cradle dynamometer of the very latest type; the other is a new G.E. hydraulic absorption machine.

Coming to the machine shops, there is considerable human interest in the non-current model department—a place set apart for the production of old or obsolete engines and parts for service and replacement. In most cases, the very equipment used originally for the production of an obsolete part is being used in this department for filling service requirements. Assuredly, this is one activity that should attract the attention of White users and prospects.

In the main engine machine shop the visitor will find many items of new equipment of advanced nature. One of the most interesting of these is the Baush single-point precision boring machine used for finish-boring cylinder barrels. This is a three-spindle machine and it is being used for finishing every engine in current production. The machine is of the type first exhibited in Detroit only about a year or so ago, and described in AUTOMOTIVE INDUSTRIES, January 9, 1937, page 57.

Rough-honing of cylinder bores is done on a single-spindle Barnes machine fitted with Micromatic hones. For finish-honing they use a six-spindle Moline Hole-Hog with Micromatic hones. These machines, too, are used for the entire range of bore sizes.

After the cylinder blocks have been completely processed over the machine line, as indicated on the sample routing, each block is thoroughly washed in a special Blakeslee washer using a hot solution of

(Turn to page 646, please)

BEARING PROTECTION
. . . FOR LIFE!
The correct oil film to each individual bearing... automatically
"Gallmeyer & Livingston" Grinder
BIJUR
AUTOMATICALLY Correct LUBRICATION
● The Bijur Automatic Lubricating System automatically feeds any number of bearings the metered oil film each requires. Maximum protection for machine life! Bearings, slides, gears . . . lubricated correctly, economically. None forgotten. ● Insure high-speed runs with new-machine accuracy. Avoid expensive production delays. Cut maintenance costs. Protect your investment! . . . With BIJUR.
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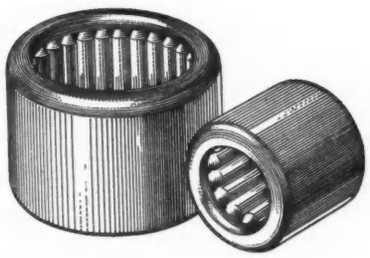
TORRINGTON NEEDLE BEARING

DESIGN AND SERVICE FEATURES



HIGH UNIT CAPACITY PERMITS HEAVY LOADING

Needle Bearing will Withstand Severe Service

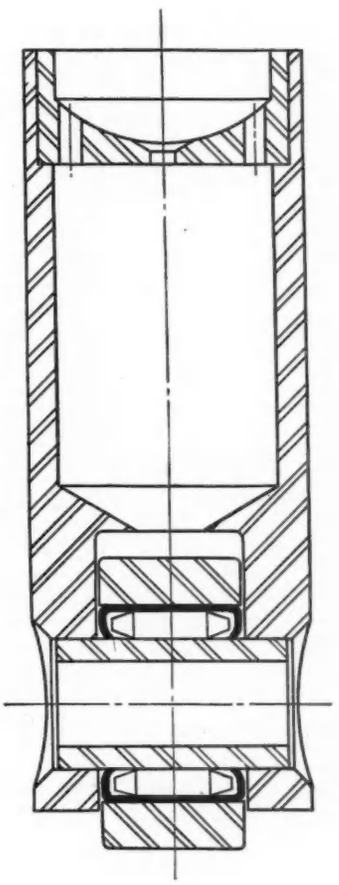
THE HIGH UNIT capacity of the new Torrington Needle Bearing—result of its full complement of small-diameter rollers—permits heavy loading in severe applications such as the one illustrated.

High momentary loads, applied with extreme frequency, are typical of the service conditions encountered in the roller of a valve lifter assembly. The Torrington Needle Bearing is ideally suited to such applications, because its high capacity is combined with small size—an important factor where space is exceedingly limited.

Hardened Shells

While all shells of Torrington Needle Bearings are carefully hardened, for severe applications such as valve lifter rollers, a shell with a deeper case is provided.

Because of its ease of assembly, the bearing is well adapted to automotive production methods. Moreover, the construction of the Needle Bearing contributes to the simplification of housing design—permitting reduction both in size of mechanism and in cost of production.



Low unit cost of the bearing itself offers further economies.

The experience of the Torrington Engineering Department in laying out applications is at the service of manufacturers wishing to use this bearing in their own products. Further information is given in the Torrington Needle Bearing Catalog, available on request. Write for Catalog No. 7.

The Torrington Company
ESTABLISHED 1866
Torrington, Conn., U.S.A.
Makers of Ball and Needle Bearings
Branch Offices in all Principal Cities

TORRINGTON
NEEDLE BEARING

soda-ash and soluble oil. From this point the block is ready for the assembly line.

We attach much importance to the adoption of the surface broaching method in a multiple-lot operation of this character. It has been applied here to the finishing of 14 different types of main bearing caps—broaching the joint faces, crank faces, ends, and 45 deg. bevels. As illustrated, the operation takes place in a Cincinnati Hydro-Broach, a vertical duplex broaching machine fitted with a table carrying two work-holding fixtures, each one having two independent work stations. The machine finishes a total of 350 distinct work surfaces per hour.

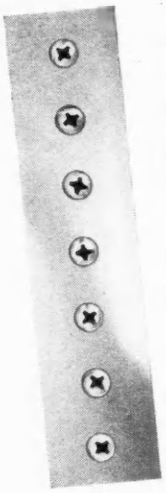
The broach speed is 31 f.p.m., with stock removal of 0.1 in. The broaches, four in number, and arranged according to the sequence of work-stations, are made up of sections of high-speed-steel inserts.

In operation, stations 1 and 4 are in the left-hand fixture while stations 2 and 3 are in the right-hand fixture. At station 1, a rough cap is located from the half bore for broaching the joint face and bevels. An additional tool, approximately 5 in. long, removes 1/32 stock from one end pad for location at station 2.

One crank face and one end are broached at station 2 by tools arranged at right angles to each other. Location is taken from the finished joint face and one finished end pad. The work progresses to station 3 for the remaining crank face and end. Here again, two rows of tools, arranged at right angles to each other, remove a maximum of 0.1 stock.

Bolt bosses are broached as a final operation, locating from previous broached surfaces. The fixtures are hand clamped and are arranged with replaceable locating details for all 14 designs of caps. The tooling is arranged for progressive broaching of the work with replaceable inserts for variable sizes.

7 ADVANTAGES OF THE PHILLIPS RECESSED HEAD



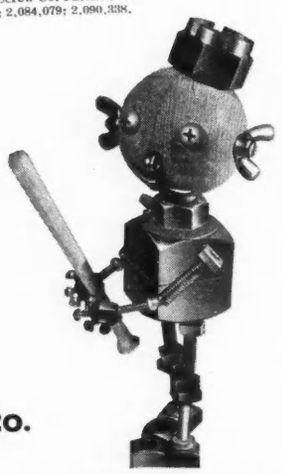
1. Self centering on the driver
2. Holds driver from slipping
3. Drives faster
4. Eliminates head breakage
5. Prevents marring work
6. Makes better appearance
7. Simplifies hard-to-get-at jobs

And they all add up to a better job at lower cost. Let us advise and quote you.

Sub-license for Phillips Screws granted by American Screw Co. Patent Nos. 2,046,837; 2,046,839, 2,046,343; 2,082,085; 2,084,078; 2,084,079; 2,090,338.

NAT SAYS...

Make up your team
And count me in,
I'll make a hit
And help you win.



National
HEADED AND THREADED PRODUCTS

THE NATIONAL SCREW & MANUFACTURING CO.
CLEVELAND, OHIO

Vauxhall Extend Research Facilities

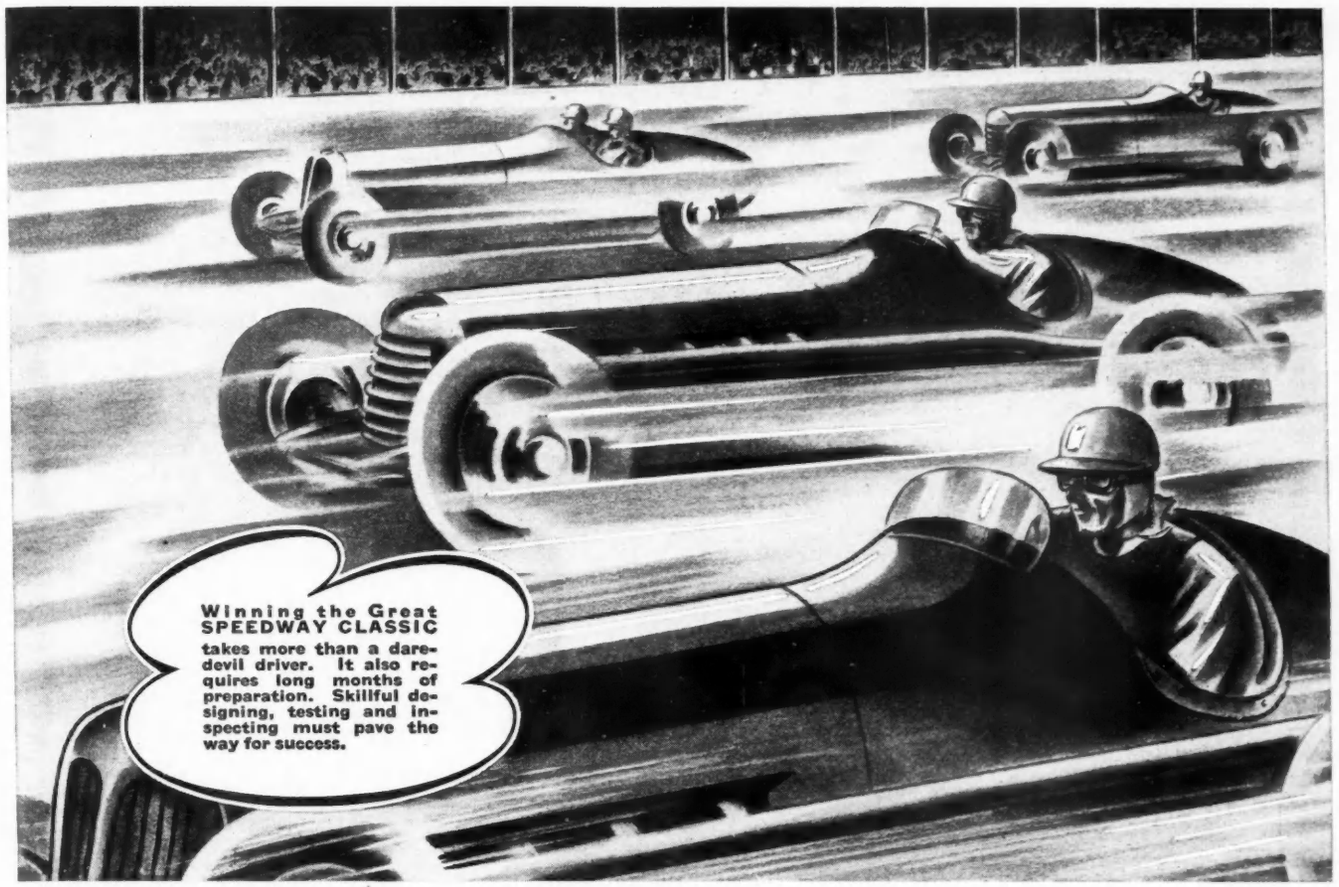
GENERAL MOTORS British subsidiary, Vauxhall Motors, Limited, recently brought into use a new research building adjacent to the manufacturing and administration building at Luton, Bedfordshire (about 30 miles from London). The new building with equipment cost £175,000; it has a total floor area of 101,062 sq. ft. and a staff of approximately 330.

This latest extension of the Vauxhall plant is part of a continuous expansion that has been in progress since G.M.C. acquired control of the undertaking, expansion that is still proceeding, for at the present time three more buildings are being enlarged.

The estate on which the plant is located has an area of 125 acres, and the buildings in use have a covered floor space of 55 acres. There are between 8,000 and 9,000 employes; the wage bill in 1937 amounted to £1,826,412, plus £65,478 distributed under a profit-sharing scheme. Production in 1937 amounted to 59,744 Vauxhall cars and Bedford trucks, 19,458 of which were exported.

As at present organized, the engineering department has C. E. King as chief engineer (a position he held with Vauxhall even before G.M.C. acquired its predominating interest), with H. Drew as his chief assistant. Departmental chiefs are Maurice

(Turn to page 648, please)


Winning the Great
SPEEDWAY CLASSIC
takes more than a daredevil driver. It also requires long months of preparation. Skillful designing, testing and inspecting must pave the way for success.

GREAT PERFORMANCE . . DEMANDS *Careful Preparation*

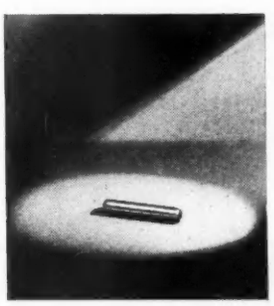
OUTSTANDING performance records constantly being made by Bantam Bearings are due to *careful preparation* which precedes each manufacturing operation.

Selected materials are pre-tested to determine hardness and durability. Special impact tests assure toughness. Innumerable inspections and re-inspections insure the exact qualities needed for each job. The finest craftsmen available safeguard Bantam quality every step of the way from ingot to finished product.

That's why Bantam Bearings have won an enviable reputation for dependability throughout the Automotive industry.

BANTAM BEARINGS CORPORATION
South Bend, Indiana
Subsidiary of THE TORRINGTON CO., Torrington, Conn.

BANTAM BEARINGS



Bantam Bearings are used in one or more of 23 different places in all leading makes of American motor cars. The roller shown is from a universal joint. Patented machinery and ingenious methods developed by Bantam enable us to make them better.

TAPERED ROLLER . . . STRAIGHT ROLLER . . . BALL BEARINGS

Olley, passenger vehicle engineer; F. A. S. Acres, commercial vehicle engineer; and Alex. Taub (who joined Vauxhall last year from G.M.C. in America, as power unit engineer). Mr. King is also a member of the Board of Directors, the chairman of which is Mr. Leslie Walton, who has been a member of the Board since 1907, when the company was formed as the automobile section of the Vauxhall Ironworks, which made its first car in 1903.

It is of interest to note that Harry Platt, the man who bored the single cylinder of that first Vauxhall car, is still among the employes of the company, one of 20 who have been with the concern for over 25 years.

Bendix Suspends Operations

Vincent Bendix, president of Bendix Aviation Corp., stated that because of contemplated changes in manufacturing processes as well as changes in the buildings of the plant, production has been temporarily suspended.

"There is a possibility of our bringing in additional industries and expanding the new plant still further," Mr. Bendix added.

Parker Rust-Proof Report

Parker Rust-Proof Co. reports for quarter ended March 31, 1938, a net profit of $117,184 after depreciation, Federal income taxes, etc., but before surtax on undistributed profits, equivalent after preferred dividend requirements, to 27 cents a share on 429,498 shares (par $2.50) on common stock.

This compares with $329,850 or 76 cents a share on common in March quarter of the previous year.

Parker Rust-Proof Co. declared a dividend of 20 cents on the common, as against 37½ cents paid on March 1, last.

Pitcairn Speaks on Autogiros

(Continued from page 616)

velopment of autogiros be limited to service tests and experimental work.

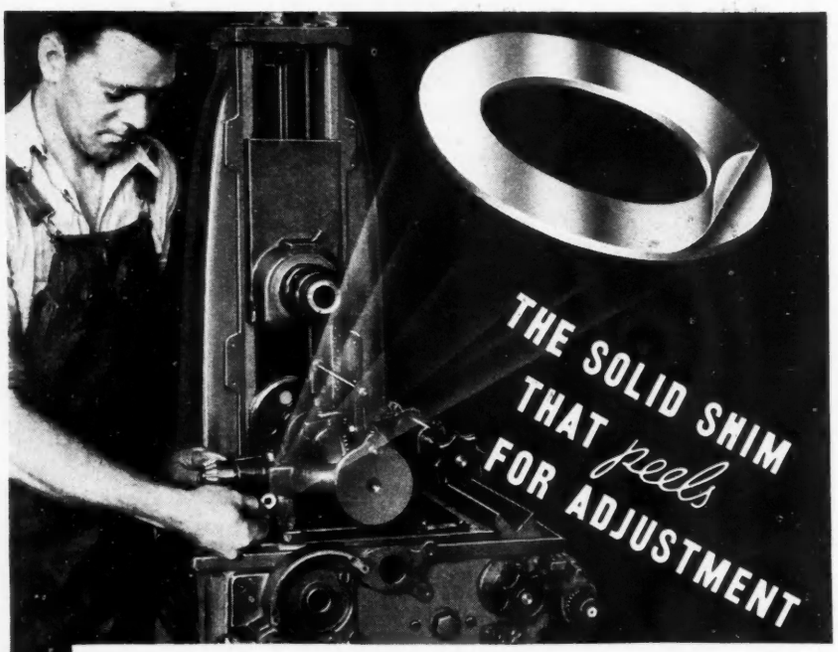
He pointed out the advantage of the rotary-wing type of aircraft in war maneuvers and his testimony was confirmed in this respect by spokesmen for various branches of the Army. General Oscar Westover, chief of the Army Air Corps testified that the autogiro offered "great possibilities" but that any experimental work conducted by the Government should not be confined to the autogiro alone. He listed three other types, including two rotary-wing planes, and what he described as a slow, high-lift airplane, as offering possibilities for taking off and landing in limited areas.

He said that present autogiros are not heavy enough to accommodate communication facilities when used for observation purposes but that they were a great improvement over balloons. He said the vulnerability of the autogiro had not been determined in war maneuvers.

A spokesman for the War Department expressed interest in the bill but expressed doubt that it would give its unqualified approvel when the $2,000,000 expenditure might be needed for other work, possibly of greater importance to the department.

Correction

The address of Walter Romberg who carries a stock of Fichtel and Sachs engines and parts was given incorrectly in the story on page 612 of the April 30 issue of AUTOMOTIVE INDUSTRIES. Correct address is 90 West Broadway, New York City.



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. . . both in assembly AND service adjustments, precision is vital. This LAMINUM shim is employed to quickly obtain precision adjustment of the clutch shaft bracket support on a surface grinding machine . . . by one of the country's leading machine tool manufacturers. Write for Laminum sample (.002 or .003 in. laminations).

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Precision adjustment SHIMS

"Fast, accurate, convenient"

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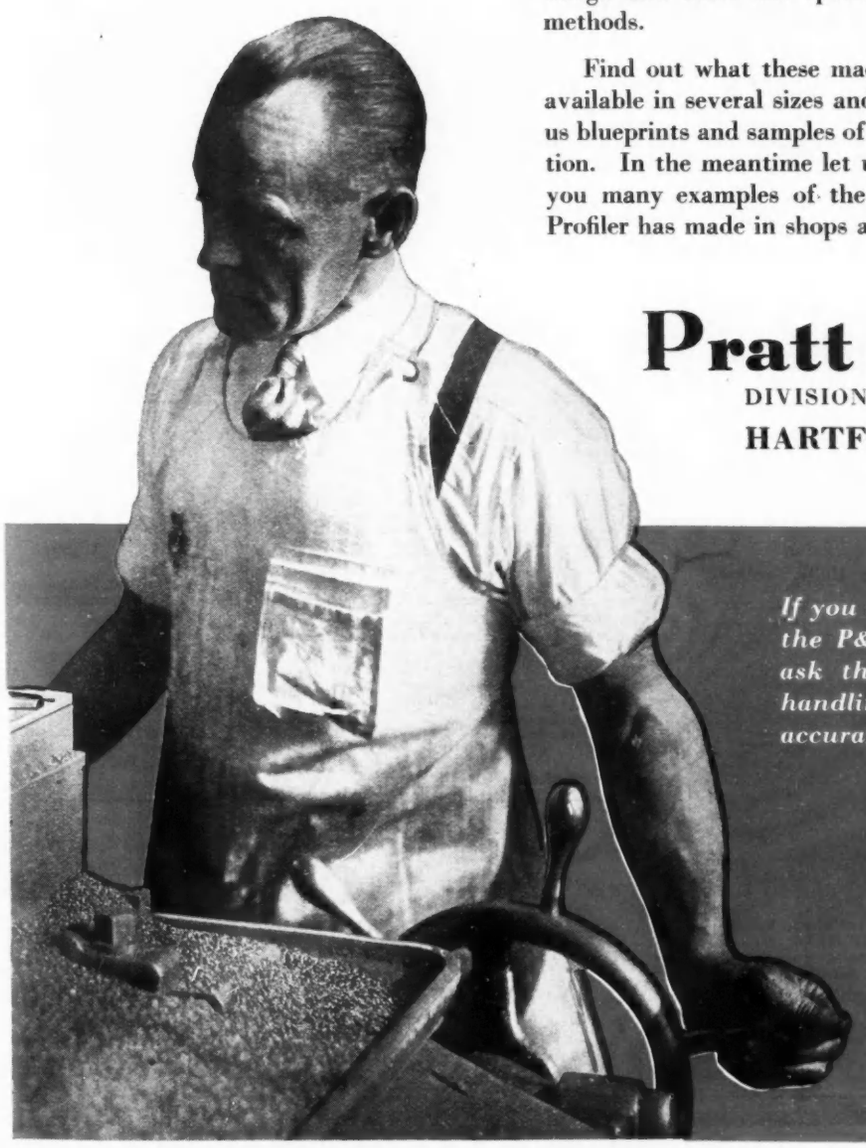
Pratt & Whitney Vertical Millers and Profilers

It has all the advantages of a strong, rigidly built vertical miller capable of heavy cuts, combined with the flexibility and wide work range of a profiler. This machine is particularly useful in spot milling or finishing surfaces in various planes which would be inaccessible to an ordinary miller.

The characteristics of this machine are such that it is easy and simple to set up for a production run. For this reason it is ideal for the shop having many different small lot milling jobs. This ease of changing over from one job to another makes the machine economical to operate.

The P&W Vertical Miller and Profiler frequently eliminates the cost of elaborate tooling. Such fixtures as are needed on this machine are usually quite simple, and often none are needed at all. We have seen jobs finished on this machine in less time than it would take to design and build the special fixtures and tools required by other methods.

Find out what these machines can do on your work. They are available in several sizes and with either one or two spindles. Send us blueprints and samples of your work for time estimates on production. In the meantime let us tell you the complete story and show you many examples of the savings the P&W Vertical Miller and Profiler has made in shops all over the country. Write to us today.



If you want a real first hand opinion of the P&W Vertical Miller and Profiler, ask this operator or any other man handling this machine. They know its accuracy and the kind of work it will do.

Pratt & Whitney

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